

Curriculum Vitae di Lupato Anna

Nome e Cognome: Anna Lupato

Data e luogo di nascita: 17 Maggio 1987, Ferrara (Italia)

Indirizzo: Via Maffei 473, 45039 Stienta (Ro), Italia

Codice Fiscale: LPTNNA87E57D548G

Telefono: +39 3479843908

Email: anna.lupato@cern.ch, lupato.anna@gmail.com

Formazione e Carriera accademica

- 26/04/2021 - 26/04/2030: Abilitazione Scientifica Nazionale, settore concorsuale 02/A1, Fisica sperimentale delle interazioni fondamentali, fascia II.
- Marzo 2024 - Febbraio 2027: Ricercatore a tempo determinato (tipo B) presso il Dipartimento di Ingegneria e scienze applicate, Università degli studi di Bergamo.
- Febbraio 2023 - Febbraio 2024: Ricercatore a tempo determinato (tipo A) presso il Dipartimento di Fisica e Astronomia G. Galilei, Università degli Studi di Padova.
- Gennaio 2020 - Gennaio 2023: Research associate presso il dipartimento di Fisica dell' University of Manchester.
- 2019 - Gennaio 2020: Assegnista presso il Dipartimento di Fisica e Astronomia G. Galilei, Università degli Studi di Padova. Titolo dell'assegno: "LHCb RICH Upgrade and data analysis".
- 2017 - 2018: Assegnista presso il Dipartimento di Fisica e Astronomia G. Galilei, Università degli Studi di Padova. Titolo dell'assegno: "LHCb RICH Upgrade and search for lepton universality violation in rare b-baryon decays".
- Gennaio 2014 - Novembre 2017: Dottorato di Ricerca in Fisica conseguito presso l'Università degli Studi di Padova. Titolo della tesi: "Study of semitauonic and semimuonic $\Lambda_b^0 \rightarrow \Lambda_c^{*+} l^- \bar{\nu}_l$ decays at LHCb". Supervisors: Dott. Marcello Rotondo, Prof. Gabriele Simi.
- Dicembre 2009 - Luglio 2013: Laurea Magistrale in Fisica conseguita presso l'Università degli Studi di Ferrara. Titolo della tesi: "Measurement of the Neutral B Meson Oscillation Frequency with $B_d^0 \rightarrow D^* \mu \nu_\mu$ Decays at LHCb". Supervisor: Dott. Concezio Bozzi. Votazione finale: 110/110 cum laude.
- Luglio 2009 - Settembre 2009: Internship presso il laboratorio SpinLab dell'Università degli Studi di Ferrara.
- Settembre 2006 - Dicembre 2009: Laurea Triennale in Fisica ed Astrofisica conseguita presso l'Università degli studi di Ferrara. Titolo della tesi: "Development of high intensity atomic sources of polarized hydrogen and deuterium". Supervisor: Dott. Paolo Lenisa. Votazione finale: 110/110 cum laude.
- Settembre 2001 - Luglio 2006: Diploma di istruzione secondaria superiore ad indirizzo scientifico (P.N.I) conseguito presso il Liceo Scientifico "A. Roiti", Ferrara. Votazione finale: 100/100.

Attività di ricerca

- Ottobre 2012 - Dicembre 2013: Ho contribuito alla misura della frequenza di oscillazione del mesone B_d^0 , Δm_d , importante poiché permette di estrarre $|V_{td}V_{tb}^*|$, dove V_{td} e V_{tb} sono gli elementi della matrice CKM (Cabibbo-Kobayashi-Maskawa), e quindi mettere un vincolo al triangolo di unitarietà. Questa misura è stata eseguita considerando i decadimenti semileptonici dei mesoni B^0 con D^- e D^{*-} negli stati finali. Ho parametrizzato le risoluzioni temporali in funzione del tempo e ho studiato numerose tecniche di fit della distribuzione temporale. Ho, inoltre, collaborato allo sviluppo del fit, che ha permesso l'estrazione del parametro Δm_d , e alla misura dell'asimmetria semileptonica nel mixing del $B^0 - \bar{B}^0$.

Questi risultati sono stati pubblicati, rispettivamente, su:

European Physical Journal C (DOI: 10.1140/epjc/s10052-016-4250-2)

e Physical Review Letters (DOI: 10.1103/PhysRevLett.114.041601).

- 2014: Ho contribuito allo sviluppo di un algoritmo di ricostruzione delle tracce per il trigger di LHCb che sfrutta acceleratori, nel caso specifico, GPU (Graphics Processing Unit). Ho testato l'algoritmo su campioni di eventi simulati di LHCb per misurare le prestazioni temporali e l'efficienza di selezione. Questo risultato è stato pubblicato sul Technical Design Report for the LHCb upgrade trigger (CERN-LHCC-2014-016. LHCb-TDR-016) e sulla nota pubblica CERN-LHCb-PUB-2014-034.
- 2014 - 2015: Sono uno degli autori principali della prima osservazione del canale di decadimento $B_s^0 \rightarrow D_s^{*\mp} K^\pm$ e misura di $\mathcal{B}(B_s^0 \rightarrow D_s^{*\mp} K^\pm)/\mathcal{B}(B_s^0 \rightarrow D_s^{*-} \pi^+)$. Lo studio delle ampiezze di decadimento $B_s^0 \rightarrow D_s^{*\mp} K^\pm$ and $B_s^0 \rightarrow D_s^{*-} \pi^+$ permette, tramite un'analisi dei tempi di decadimento, di misurare l'angolo CKM γ . Ho collaborato alla selezione del segnale tramite un'analisi multivariata, ho sviluppato il codice per l'estrazione dello stesso, ho contribuito alla valutazione delle incertezze sistematiche ed ho eseguito tutti gli studi relativi al canale di normalizzazione $B_s^0 \rightarrow D_s^{*-} \pi^+$. Questo risultato è stato pubblicato sul Journal of High Energy Physics (DOI: 10.1007/JHEP06(2015)130).
- 2015 - 2020: Ho preso parte alle attività relative ai rivelatori Ring Imaging Cherenkov (RICH) della collaborazione LHCb. Ho svolto il ruolo di RICH expert on call durante il Run 2 di LHC e ho contribuito alle attività di upgrade dei rivelatori per il Run 3. LHCb ha operato ad una luminosità pari a $\mathcal{L} = 4 \times 10^{32} \text{ cm}^{-2} \text{ s}^{-1}$ durante il run2 ed è recentemente stato aggiornato per raccogliere dati ad una luminosità pari a $\mathcal{L} = 2 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$. Pertanto i rivelatori RICH sono stati modificati per impedire la diminuzione delle performance di identificazione delle particelle a tali rate. In particolare sono stati installati nuovi fotomoltiplicatori multi-anodo (MaPMTs) e nuove digital front-end boards (CLARO).
 - Ho contribuito allo sviluppo della stazione di test per i MaPMTs a Padova e alla definizione della procedura di test (quality assurance). Ho, inoltre, sviluppato il codice per la caratterizzazione dei fotomoltiplicatori basato su un fit allo spettro delle altezze di impulso. Grazie ad esso è stato possibile estrarre i parametri necessari per individuare la qualità dei rivelatori e definire i criteri per il raggruppamento degli stessi secondo la geometria di LHCb. Ho partecipato al test di più di 2000 fotomoltiplicatori.
 - Ho preso parte ai test su fascio al CERN per il commissioning dell'elettronica e del sistema di acquisizione dei rivelatori MaPMTs. Ho svolto l'analisi dei dati dei test beam al fine di caratterizzare il nuovo sistema.
 - Ho partecipato alla definizione ed implementazione della procedura per individuare la condizione di lavoro ottimale a cui i RICHes opereranno durante in Run 3. Ho supervisionato il CERN summer student project di Valeria Lukashenko che ha vinto il premio "Moritz Karbach Prize". Il CLARO

necessita per ogni suo canale una soglia di lavoro ottimizzata che permetta di massimizzare il rapporto segnale-rumore. Il progetto prevedeva l'utilizzo del modello di fit allo spettro delle altezze di impulso dei MaPMTs sviluppato per la quality assurance, per lo studio dei scan in soglia e per l'individuazione della strategia migliore di individuazione delle soglie.

– Ho contribuito all'analisi delle performance dei rivelatori RICH per il run 2. Tali risultati sono stati pubblicati sul Journal of Instrumentation. (DOI:10.1088/1748-0221/17/07/P07013)

- 2015 - 2016: Ad un collider adronico la cinematica di un decadimento semileptonico con un singolo neutrino può essere risolta al massimo con una doppia ambiguità e pertanto non è possibile ricostruire completamente l'impulso del adrone contenente quark b sfruttando la ricostruzione delle particelle in cui decade. Per stimare l'impulso degli adroni contenenti quark b che decadono semileptonicamente, ho sviluppato un algoritmo di regressione multivariata che sfrutta la direzione di volo degli adroni che decadono. Ho curato lo sviluppo di questo algoritmo utilizzando i pacchetti TMVA e scikit-learn, e ottimizzato le variabili d'ingresso al fine di ottenere la migliore approssimazione dell'impulso dell'adrone che decade. Questo algoritmo, di cui sono uno degli autori principali, è oggi utilizzato in numerose analisi all'interno della collaborazione LHCb.

Il risultato di questo lavoro è stato pubblicato su Journal of High Energy Physics (DOI: 10.1007/JHEP02(2017)021).

- 2015 - 2017: Ho misurato il rapporto $R_{\Lambda_c(2625)} = \mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2625)\tau^-\bar{\nu}_\tau)/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2625)\mu^-\bar{\nu}_\mu)$ al fine di confermare o confutare nel settore barionico, le evidenze di non universalità leptonica già osservate nei decadimenti a pinguino elettrodebole e nei decadimenti semileptonici nel settore mesonico. La prima misura di questa quantità è stata oggetto della mia tesi di dottorato ed è stata eseguita utilizzando i dati raccolti dal rivelatore LHCb durante il 2012 ($\mathcal{L} = 2\text{fb}^{-1}$). Sono stati esaminati soltanto i decadimenti muonici del τ e i barioni $\Lambda_c^+(2625)$ sono stati ricostruiti nel canale di decadimento $\Lambda_c^+(2625) \rightarrow \Lambda_c^+(\rightarrow pK^-\pi^+)\pi^+\pi^-$. Il rapporto è misurato tramite il fit della distribuzione prodotta da una rete neurale applicata ai dati. Essa si basa sul quadrato della massa mancante, sull'energia del leptone nel centro di massa della Λ_b^0 e sulla distribuzione prodotta da un discriminante di Fisher, costruito usando le informazioni relative al vertice di decadimento della Λ_b^0 . Il fit è stato eseguito simultaneamente in intervalli del quadrato del quadrimpulso trasferito al sistema leptonic e in intervalli della variabile di isolamento. Tale variabile permette la selezione di un campione arricchito di decadimenti doppio charmati della Λ_b^0 , fondo dominante in questa analisi, al fine di discriminarli dai decadimenti $\Lambda_b^0 \rightarrow \Lambda_c^+(2625)\tau^-\bar{\nu}_\tau$. Ho eseguito integralmente questa analisi.

Il risultato di questa analisi è presentato nella nota LHCb-ANA-2018-026 e pubblicato su <https://hdl.handle.net/11577/3426316>

- 2017 - 2018: La risonanza $\Lambda_c(2595)$ decade prevalentemente in $\Sigma_c(\rightarrow \Lambda_c\pi)\pi$. Tale decadimento è molto vicino alla soglia di produzione e ciò comporta che la forma dello spettro in massa invariante $\Lambda_c(2595) \rightarrow \Lambda_c\pi\pi$ sia distorta rispetto a quella attesa per una risonanza. Ho pertanto implementato il modello fenomenologico di Bleachman et al. [10.1103/PhysRevD.67.074033] al fine di modellare tale distribuzione. Questa parametrizzazione permette di eseguire tutte le analisi che coinvolgono i decadimenti della $\Lambda_c(2595)$ ed in particolare, di estendere la misura di $R_{\Lambda_c^*}$ a tali decadimenti, al fine di aumentare la statistica disponibile. Tale parametrizzazione è ad oggi utilizzata ampiamente ad LHCb e parte del lavoro descritto in LHCb-INT-2024-012.
- 2018 - oggi: Sono l'autore principale e coordinatrice della prima misura dei fattori di forma $\Lambda_b^0 \rightarrow \Lambda_c^{*+}$, che permetterà di ridurre le incertezze sistematiche sulla misura di $R_{\Lambda_c^*} = \mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^{*+}\tau^-\bar{\nu}_\tau)/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^{*+}\mu^-\bar{\nu}_\mu)$

$\Lambda_c^{*+}\mu^-\bar{\nu}_\mu$) in cui $\Lambda_c^* = (\Lambda_c(2595), \Lambda_c(2625))$ e $\Lambda_c^{*+} \rightarrow \Lambda_c^+(\rightarrow pK^-\pi^+)\pi^+\pi^-$. Tale analisi è stata eseguita utilizzando i dati raccolti dal rivelatore LHCb durante il run 1 e il 2016. Ho eseguito la selezione degli eventi basata su un'analisi multivariata e su di un fit della distribuzione di massa invariante $m(pK\pi\pi\pi) - m(pK\pi)$ in intervalli di quadrimpulso trasferito al sistema leptonic (q^2) e del coseno dell'angolo di elicità del muone ($\cos\theta$). Ho corretto i campioni simulati in base alle discrepanze conosciute tra le distribuzioni dei dati e dei campioni simulati stessi. Ho estratto le efficienze in ogni bin ed eseguito l'unfolding, al fine di determinare gli spettri degli eventi in q^2 e $\cos\theta$. Ho contribuito allo sviluppo del fit a tali spettri (basato sul modello descritto in 10.1007/JHEP06(2018)155) grazie al quale è possibile estrarre i fattori di forma. Ho determinato le incertezze sistemate e misurato il rapporto $\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2625)\mu^-\bar{\nu}_\mu)/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2595)\mu^-\bar{\nu}_\mu)$.

Il risultato di questa analisi è descritto nella nota LHCb-ANA-2019-033 e l'analisi entrerà in review nei prossimi mesi.

- 2019 - oggi: Le distribuzioni cinematiche dei decadimenti con doppio charm $\Lambda_b^0 \rightarrow \Lambda_c^* D_s^{(*)}$ (in cui $\Lambda_c^* = (\Lambda_c(2595), \Lambda_c(2625))$, $\Lambda_c^{*+} \rightarrow \Lambda_c^+(\rightarrow pK^-\pi^+)\pi^+\pi^-$ e $D_s^{(*)} \rightarrow X\mu\nu$) sono molto simili a quelle dei decadimenti $\Lambda_b^0 \rightarrow \Lambda_c^{*+}\tau^-\bar{\nu}_\tau$. Questo comporta l'impossibilità di eseguire misure accurate senza mettere un vincolo su tali decadimenti. Inoltre, tali decadimenti sono rilevanti nel contesto delle ricerche di pentaquarks. Pertanto, sono autore principale alla misura del rapporto di decadimento $\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^* D_s^{(*)})/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c D_s^{(*)})$, dove $D_s \rightarrow KK\pi$. Ho elaborato e supervisionato tutte le fasi di questa analisi, basata sullo sviluppo di un fit bidimensionale simultaneo alla $m(\Lambda_b^0)$ e $m(\Lambda_c^*) - m(\Lambda_c)$. Questa analisi è stata parte del progetto di dottorato della Dott. Federica Borgato, di cui sono stata supervisore. Gli studi di selezione e degli algoritmi multivariati, inoltre, sono stati eseguiti con la collaborazione del Dott. Piero Argenton, per il suo progetto di laurea triennale in Fisica; grazie ai Summer Student Cern Projects del Dott. Sebastian Rocks e della Dott.ssa Pamela Llerena Delgado e con il contributo per progetto di "Introduction to research activity" della Dott.ssa Anna Sofia Moro. L'analisi entrerà in review entro pochi mesi.
- 2019 - oggi: Sto eseguendo la misura del rapporto $R_{\Lambda_c^*}$, dove $\Lambda_c^* = (\Lambda_c(2595), \Lambda_c(2625))$, sui dati raccolti dal rivelatore LHCb durante il run 2. Solo i decadimenti muonici del τ sono presi in considerazione e i barioni Λ_c^* sono ricostruiti in $\Lambda_c^{*+} \rightarrow \Lambda_c^+(\rightarrow pK^-\pi^+)\pi^+\pi^-$.
- Febbraio 2020 - Marzo 2025: Sono tra gli autori principali e coordinatrice della misura dell'asimmetria CP utilizzando i decadimenti $B_s^0 \rightarrow D_s^\mp K^\pm$ eseguita sui dati raccolti dal rivelatore LHCb durante il run 2. Le analisi time-dependent di questi decadimenti sono sensibili alla misura dell'angolo CKM γ grazie alla violazione CP nell'interferenza tra i canali di decadimento con e senza mixing. Mi sono occupata della fase di selezione del segnale e riduzione dei fondi principali, tramite lo studio dei processi di decadimento e algoritmi multivariati. In seguito, ho sviluppato il fit bidimensionale alle masse invarianti del B_s e del D_s , al fine di discriminare i candidati di segnale rispetto ai contributi di fondo. Ho poi collaborato alla misura dei parametri che violano CP tramite un fit alla distribuzione del tempo di decadimento, che tiene in considerazione anche gli effetti di risoluzione e accettazione temporale, e la possibile oscillazione dei mesoni coinvolti. Infine ho preso parte alla valutazione degli errori sistematici. Questa analisi è stata pubblicata su JHEP DOI:10.1007/JHEP03(2025)139
- Luglio 2021 - oggi: Sono tra gli autori principali e coordinatrice della misura della violazione CP utilizzando i decadimenti $B^0 \rightarrow D^\pm \pi^\mp$ eseguita sui i dati raccolti dal rivelatore LHCb durante il run 2. L'approccio a tale misura è simile a quello descritto relativamente all'analisi $B_s^0 \rightarrow D_s^\mp K^\pm$, ed è basato su un'analisi flavour-tagged dei rapporti di decadimento time-dependent. Mi sono occupata della fase

di selezione del segnale e riduzione dei fondi principali, tramite lo studio dei processi di decadimento e algoritmi multivariati. Ho sviluppato di un fit bidimensionale alle masse invarianti del B e del D , al fine di discriminazione i candidati di segnale rispetto ai contributi di fondo. Questi studi sono anche parzialmente stati parte del CERN summer student project di Elser Afolo Lopez Rosa, che ha preso la menzione di merito dalla collaborazione LHCb. Ho, inoltre, supervisionato il Ph.D student, Lukas Arthur Foreman negli studi relativi al flavour tagging e quattro studenti dei progetti semestrali di analisi dati dell'università di Manchester che hanno valutato la risoluzione e accettazione temporale. Si sta ora procedendo allo sviluppo del fit alla distribuzione temporale.

- 2020 - 2023: membro del Real Time Analysis LHCb group. A partire dal run 3 di LHCb, a causa delle grandi quantità di dati prodotti nelle collisioni di protoni non è più possibile salvare gli eventi raw acquisiti, bensì è possibile immagazzinare soltanto i dati che superano criteri predefiniti (linee di trigger), che sono eseguiti "online" grazie ad un sistema di buffering.
 - Ho contribuito allo sviluppo di un tool che permette di monitorare il livello di occupazione del buffer del disco e di prevedere le tempistiche per il raggiungimento del livello di saturazione di tale memoria. Ora sono responsabile di tale attività.
 - Ho sviluppato parte degli algoritmi per il monitoraggio real-time degli eventi che superano le linee di trigger.
- Gennaio 2022 - oggi: Sono tra gli autori dell'analisi volta ad individuare contributi di nuova fisica tramite una analisi angolare del decadimento $\Lambda_b^0 \rightarrow \Lambda_c^+ \mu^- \bar{\nu}_\mu$. Sono responsabile degli studi sul fondo $\Lambda_b^0 \rightarrow \Lambda_c^{*+} \mu^- \bar{\nu}_\mu$: dell'estrazione del segnale e della correzione dei campioni simulati in base alle discrepanze conosciute tra le distribuzioni dei dati e dei campioni simulati stessi. Tale analisi è nella prima fase di revisione il 16/09/24.
- 2023 - oggi: Membro della collaborazione Muon Collider Ho iniziato a collaborare con l' International Muon Collider Collaboration al CERN. In particolare ho iniziato ad esaminare le tecniche di simulazione e i modelli per descrivere il fondo indotto da fascio generato dai decadimenti dei muoni e della corrispondente interazione con un calorimetro. In questo contesto ho sottomesso, e sono stata responsabile, del progetto per un'assegnato di ricerca post-doc su "Study of beam-induced background effects on the calorimeter detector at high energy muon collider and design and test of prototypes" (Pard2023-Unipd). Qundong Han, ha preso servizio presso l'università di Padova in novembre 2024. Nel mese di luglio è stato sottomesso su Arxiv l' "Interim report for the International Muon Collider Collaboration" (IMCC) (DOI:10.23731/CYRM-2024-002).
- Maggio - Settembre 2024: Ho progettato e supervisionato il lavoro di Arsenii Gavrikov, Ph.D dell'università di Padova, nello sviluppo di un algoritmo ML-based per migliorare la qualità dei dati per il monitoring online in LHCb.

Attività di coordinamento di gruppi di ricerca internazionali

- Gennaio 2023 - Marzo 2025: Coordinatore scientifico del Semileptonic Working Group dell'esperimento LHCb (60 persone). Tale ruolo prevede la coordinazione di tutte le attività inerenti ai decadimenti semileptonici all'interno dell'esperimento LHCb e la partecipazione al Physics Planning Group dell'esperimento. Sono responsabile della linea di ricerca e della prima revisione delle analisi del working group, degli abstracts e del materiale sottomesso alle conferenze, della coordinazione dei sub-conveners, dei tools, delle linee di trigger e delle selezioni comuni utilizzate.

- Marzo 2020 - Marzo 2022: Coordinazione del Semileptonic Working Group dell'esperimento LHCb, focalizzato su mixing, violazione CP e decadimenti esclusivi (sub-convener). Ho partecipato alla revisione e supervisionato tutte le analisi pubblicate nel gruppo dei semileptonici relativamente a tali decadimenti prodotto dalla collaborazione LHCb.

Altre responsabilità all'interno della collaborazione LHCb

- 2018 - 2021: Responsabile dello Stripping per il Semileptonic Working Group dell'esperimento LHCb (Stripping Liaison). Non tutti gli eventi raccolti dal rivelatore LHCb durante il run 1 e 2 possono essere resi disponibili per le analisi per ragioni di spazio disco. Pertanto, dopo la ricostruzione iniziale degli eventi, viene eseguita sugli stessi una preselezione mirata al tipo di decadimento cercato (Stripping). Dal 2018 ad oggi ho supervisionato la selezione di tutte le analisi in corso nel gruppo dei semileptonici e ho permesso il re-stripping di tutti i dati raccolti durante il run 1 e il run 2 di LHCb.
- 2015 - 2020: Esperta on call per i rivelatori Ring Imaging Cherenkov (RICH) di LHCb.
- 2018 - oggi: LHCb Data Manager e Shift Leader.

Partecipazione a gruppi di ricerca nazionali ed internazionali

- 2023 - oggi : Membro del gruppo LHCb dell' Università di Padova.
- 2023 - oggi : Membro del gruppo Muon Collider dell' Università di Padova.
- Febbraio 2020 - Gennaio 2023: Membro del gruppo LHCb dell' Università di Manchester.
- 2020 - 2023: Membro del gruppo di lavoro focalizzato sulle analisi in tempo reale (RTA) della collaborazione LHCb.
- 2014 - oggi: Membro del gruppo di lavoro della collaborazione LHCb focalizzato sui decadimenti degli adroni contenenti quark b in charm aperto.
- 2015 - Gennaio 2020: Membro del gruppo LHCb RICH.
- 2014 - Gennaio 2020: Membro del gruppo LHCb dell' Università di Padova.
- Ottobre 2012 - oggi: Membro del gruppo di lavoro della collaborazione LHCb focalizzato sui decadimenti semileptonici.
- Ottobre 2012 - Dicembre 2013: Membro del gruppo LHCb di Ferrara.
- Ottobre 2012 - oggi: Membro della Collaborazione LHCb.

Progetti di ricerca

- Responsabile assegno di ricerca post dottorato della durata di 2 anni attribuito tramite bando competitivo dell'università di Padova (PARD 2023). Titolo: "Study of beam-induced background effects on the calorimeter detector at high energy muon collider and design and test of prototypes".
- CERN summer student projects:
 - 2025: "Spectroscopy of the $\Lambda_c \pi \pi$ system" (assegnato al Dott. Sakriya Dahal).
 - 2024: "Towards a new lepton flavour universality test with baryons: $\Lambda_b^0 \rightarrow \Lambda_c^* D_s^{(*)}$ " (assegnato alla Dott.ssa Pamela Llerena Delgado).

- 2022: “Towards a new lepton flavour universality test with baryons” (assegnato al Dott. Sebastian Rocks).
 - 2022: “A new constraint for matter/antimatter asymmetries” (assegnato al Dottor Elser Adolfo López Rosa).
 - 2018: “LHCb RICH Upgrade: CLARO calibration and MaPMT characterization” (assegnato alla Dott.eesa Valeria Lukashenko)
- Giugno 2024 - Ottobre 2024: "Introduction to research activities", progetto semestrale per gli studenti della laurea magistrale dell'Università di Padova. Titolo: Optimization studies for the measurement of $\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^* D_s^{(*)})$
 - Ottobre 2022 - Gennaio 2022: MPhys project, progetto annuale di analisi dati per gli studenti della laurea magistrale dell'Università di Manchester. Titolo: “LHCb: What happened to the antimatter?”, The University of Manchester.
 - Ottobre 2021 - Giugno 2022: MPhys project, progetto annuale di analisi dati per gli studenti della laurea magistrale dell'Università di Manchester. Titolo: “A new constraint for matter/antimatter asymmetries”, The University of Manchester.

Organizzazione/Chair di workshops

- Organizzatore e assegnatario di fondi per il workshop “Flavor Physics with b Baryons and Bc Mesons: Opportunities for Discoveries” presso il Mainz Institute for Theoretical Physics (MITP). L’workshop rientra nel programma dei Topical Workshops MITP 2026 ed è interamente finanziato per la partecipazione di 30 ricercatori internazionali. 26-29 Maggio 2026, Mainz (Germania)
- Convener al "Violation of Fundamental Symmetries with B mesons" workshop, 15-19 Dicembre 2025, Fermilab (Illinois)
- Organizzatore e chair dell’workshop “Open LHCb workshop on semileptonic exclusive $b \rightarrow c$ decays”, 12-14 Aprile 2023, Laboratori Nazionali di Frascati (Italia).

Relazioni su invito a conferenze e workshops

- Conferenze internazionali
 - Talk su invito alla conferenza ICHEP 2024, 17-24 July 2024, Prague, “LHCb measurements on semileptonic decays of b-hadrons”.
 - Talk su invito alla conferenza Standard Model @ LHC, 7-10 May 2024, Roma, “Charm, γ and ϕ_s at LHCb”.
 - Talk su invito a TAU2023, 4-8 Dicembre 2023, University of Louisville, Kentucky (USA), “LHCb measurements on semileptonic decays of b-hadrons”
 - Talk su invito alla conferenza ACHEP, African Conference on High Energy Physics, 23-27 Ottobre 2023, Rabat-Salé-Kénitra (Marocco), “Recent results from LHCb”
 - Talk su invito alla conferenza LHC Days in Split, 3 - 8 October 2022, “Overview of LHCb results”.
 - Talk su invito alla conferenza EPS-HEP2021, 26 - 30 July 2021, “CKM parameter measurement with semileptonic B_s decay at LHCb” [DOI:10.22323/1.398.0539].
 - Talk su invito alla conferenza ICHEP 2020, 28-07/6-08 July 2020, Prague, “Rare decays of Λ_b, B_c , and other b-hadrons at LHCb”. [DOI: 10.22323/1.390.0394]

- Talk su invito alla conferenza EPS-HEP2019, 10 - 17 July 2019, Ghent, Belgium, “Recent results from LHCb on charged-current decays of b-hadrons”.
[DOI: 10.22323/1.364.0223]
- Talk su invito alla conferenza “Rencontres de Blois”, Particle Physics and Cosmology, 3-8 Giugno 2018, Blois (France), “Flavour Universality Tests with B decays at LHCb”.
- Talk su invito alla conferenza “PANIC”, 1-5 Settembre 2017, Beijing (China), “Lepton Flavour Universality Tests at LHCb”. [DOI: 10.1142/S2010194518600704]
- Talk su invito alla conferenza “Heavy quarks and leptons”, 22-27 Maggio 2016, Blacksburg (Virginia), “Test of lepton flavour universality with semi-tauonic decays of b-hadrons at LHCb”. [DOI: 10.22323/1.274.0066]
- Poster alla Scuola Europea di Fisica delle Alte Energie (ESHEP), Bansko (Bulgaria) 2-15 Settembre 2015, “Semileptonic Decays at LHCb”. Tale poster è stato pubblicato su: CERN Yellow Report, 2015 European School of High-Energy Physics.

- Workshops internazionali

- Talk su invito all’ international workshop on CKM Unitarity Triangle (CKM 2025), 15-19 Settembre 2025, Cagliari (Italia), “Time-dependent measurements of γ at LHCb”.
- Talk su invito all’ workshop “Beyond the flavour anomalies”, 9-11 Aprile 2025, Roma (Italia), “ $B \rightarrow D^* \mu \nu$: how to make the most out of upcoming measurements”.
- Talk su invito all’ workshop “Open Questions and Future Directions in Flavour Physics (OFP2024)”, 4-15 Novembre 2024, Mainz (Germania), “Status and prospect of measurements using semileptonic decays”.
- Talk su invito all’ workshop “Challenges in Semileptonic B Decays 2024”, 23-27 Settembre 2024, Vienna (Austria), “Opportunities with Baryons at LHCb”.
- Talk su invito all’ international workshop on CKM Unitarity Triangle (CKM 2021), 22-26 Novembre 2021, Melbourne (Australia) (virtual), “Time-dependent measurements of γ and Δm_s at LHCb”.
- Talk su invito a b -baryon fest workshop, 5-6 November 2020, Orsay (France), Λ_b Fragmentation Functions: status at LHCb”. link: <https://indico.in2p3.fr/event/20198/>
- Talk su invito all’ “Workshop on B_c physics and semileptonic B decays in the LHC era”, 12 Dicembre 2016, Vienne (France), “Reconstruction of semileptonically decaying beauty hadrons produced in high energy pp collisions”.

- Conferenze nazionali

- Talk su invito al 111° Congresso Nazionale SIF, Roma (Italia), 22-26 Settembre 2025, “LHCb physics highlights”.
- Talk su invito all’ workshop italiano sulla fisica ad alta intensità, Bologna (Italia), 12-15 Novembre 2024, “CPV and CKM: Charm, B and semileptonic decays at LHCb”
- Talk al 101° Congresso Nazionale SIF, Roma (Italia), 21-25 Settembre 2015, “Decadimenti semileptonici charmless di adroni con beauty ad LHCb”.
- Talk con Proceeding alla conferenza “IFAE”, Roma (Italia), 8-10 Aprile 2015, “Misura del $\mathcal{B}(B_s \rightarrow D_s K)/\mathcal{B}(B_s \rightarrow D_s \pi)$ e del $\mathcal{B}(B_s \rightarrow D_s^* K)/\mathcal{B}(B_s \rightarrow D_s^* \pi)$ a LHCb”
[DOI: 10.1393/ncc/i2016-16357-y].

- Talk al 100° Congresso Nazionale SIF. Pisa (Italia), 22-26 Settembre 2014, “First observation of the $B_s \rightarrow D_s^* K (D_s^* \rightarrow D_s \gamma)$ decay and measurement of the $\mathcal{B}(B_s \rightarrow D_s^* K)/\mathcal{B}(B_s \rightarrow D_s^* \pi)$ ratio at LHCb”.
- Workshops nazionali
 - Talk a LHCb UK annual meeting 2022, 6-8 Gennaio 2022, Edinburgh (UK), “ $\Lambda_b^0 \rightarrow \Lambda_c^*$ Form Factors and $\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2595)\mu^-\bar{\nu}_\mu)/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^+(2625)\mu^-\bar{\nu}_\mu)$ ”.
 - Talk a LHCb Italia, 9-11 Aprile 2018, Cagliari (Italia), “Characterization and test of the MAPMT for the RICH upgrade”.
 - Talk a LHCb Italia, 21-22 Aprile 2016, Cagliari (Italia), “Measurement of the R ratio with $\Lambda_b^{0(*)}$ ”.

Reviews

- 2024- oggi: Reviewer per Physics Letters B.
 - 2024- oggi: Editor nel Comitato Editoriale di High-Energy and Astroparticle Physics, sezione specialistica di Frontiers in Physics e Frontiers in Astronomy and Space Sciences.
 - 2025 - 2026: Reviewer a nome del gruppo di lavoro della collaborazione LHCb focalizzato sui decadimenti in charm aperto per l’analisi “ $\Lambda_b \rightarrow \Lambda_c^+ \bar{\Lambda}_c^- p$ Study of a Purely Baryonic Decay With a Neutron at the LHC”.
 - 2025-2026: LHCb Reviewer per l’analisi “Search for $B_s^0 \rightarrow \phi \eta'$ decays in Run1 and Run2 datasets”.
 - 2022-2023: LHCb Reviewer per l’analisi “First observation of $\Lambda_b \rightarrow \Sigma_c^{(*)++} D^{(*)-} K^-$ decays and measurement of their relative branching fractions”.
- Il risultato di questo lavoro è stato pubblicato su Physical Review D
(DOI:10.1103/PhysRevD.110.L031104)
- 2020 - 2021: Reviewer a nome del gruppo di lavoro della collaborazione LHCb focalizzato sui decadimenti in charm aperto per l’analisi “Search for the decay $B_s^0 \rightarrow D^{*+} D^{*-}$ ”.
- Il risultato di questo lavoro è stato pubblicato su Journal of High Energy Physics
(DOI:10.1007/JHEP07(2023)119)

Supervisioni

- Ph.D student
 - 2022 - 2024: Supervisor della Ph.D student Federica Borgato (UniPD). Ho supervisionato il suo lavoro di analisi volto alla misura del $\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c^* D_s^{(*)})/\mathcal{B}(\Lambda_b^0 \rightarrow \Lambda_c D_s^{(*)})$
- Supervisione di tesi di laurea
 - Ottobre 2024 - oggi: Controrelatrice della tesi di laurea magistrale in Physics, presso Universidad Nacional Autónoma de México, di Elser Adolfo Lopez Rosa. Titolo: "Global Analysis of a Twist-3 Parton Distribution Function with Theoretical Constraints" .
 - 2023: Controrelatrice della tesi di laurea magistrale in Physics, presso l’Università degli studi di Padova, di Giovanni Celotto. Titolo: Differential cross section measurement of top pair production at the LHC.
 - 2018: Co-supervisor della tesi di Laurea Triennale di Pietro Argenton. Titolo della tesi: “Osservazione del decadimento $\Lambda_b^0 \rightarrow \Lambda_c^{*+} D_s^-$ ”.

Attività didattica

- Docenza

- Settembre 2025 - oggi: docente responsabile del corso di “Fisica 1”, Laurea in ingegneria delle tecnologie per l’elettronica e l’automazione, Dipartimento di Ingegneria e scienze applicate, Università degli studi di Bergamo. 6 crediti.
- Febbraio 2025 - oggi: docente responsabile del corso di “Fisica 1”, Laurea in ingegneria Edile, Dipartimento di Ingegneria e scienze applicate, Università degli studi di Bergamo. 6 crediti.
- Settembre 2024 - oggi: docente responsabile del corso di “Fisica 1”, Laurea in ingegneria Gestionale, Dipartimento di Ingegneria e scienze applicate, Università degli studi di Bergamo. 6 crediti.
- Marzo 2024 - oggi: docente responsabile del corso di “Fisica Generale”, Laurea in ingegneria delle tecnologie per la salute, Dipartimento di Ingegneria e scienze applicate, Università degli studi di Bergamo. 9 crediti.
- Febbraio 2023 - oggi: docente responsabile del corso di “Fisica Sperimentale 1”, Laurea in Ottica e Optometria, Dipartimento di Fisica e Astronomia, Università degli studi di Padova.
- Giugno 2023 - Settembre 2023 - docente responsabile delle esaminazioni per il corso “Elementi di fisica 2”, Laurea in ingegneria informatica, Università degli studi di Padova.
- Luglio 2019: Visiting Professor alla “National Advances School of Public Work”, Yaoundè, Cameroun. Docente responsabile del corso di “Fisica 2: Elettromagnetismo”, Laurea in ingegneria civile. 6 crediti

- Assistenza alla didattica

- Ottobre 2020 - Giugno 2022: Assistente alla didattica per il Year3 Physics Laboratory (annuale), Matter-antimatter Project, The University of Manchester.
- Marzo 2019 - Giugno 2019: Assistente alla didattica per corso di Fisica 1, la Scuola di Ingegneria. Università degli studi Padova.
- Ottobre 2017 - Gennaio 2018: Assistente alla didattica per il corso di Fisica Sperimentale 2, Laurea in Ottica e Optometria, Università degli studi di Padova.
- Ottobre 2015 - Giugno 2016: Assistente alla didattica per il corso di Fisica Sperimentale 2, Laurea in Ottica e Optometria, Università degli studi di Padova.
- Febbraio 2015 - Giugno 2015: Tutor didattico per il corso di Fisica Sperimentale 1, Laurea in Ottica e Optometria, Università degli studi di Padova.
- Ottobre 2014 - Ottobre 2015: Tutor didattico per il corso di Fisica Sperimentale 2, Laurea in Ottica e Optometria, Università degli studi di Padova.
- Dicembre 2014 - Gennaio 2015: Tutor di laboratorio per il corso di Fisica 2, Scuola di Ingegneria, Università degli studi di Padova.

Partecipazione a scuole internazionali

- “European School Of High Energy Physics”, Bansko (Bulgaria), 2-15 Settembre 2015.
- “INFN School of Statistics 2015”, Ischia, Napoli (Italia) 25-29 Maggio 2015.
- Sixth INFN International School on “Architectures, tools and methodologies for developing efficient large scale scientific computing applications”, Bertinoro, Forlì (Italia) 19-25 Ottobre 2014

- “V Scuola Nazionale Rivelatori ed Elettronica per Fisica delle Alte Energie, Astrofisica, Applicazioni Spaziali e Fisica Medica”, Laboratori Nazionali di Legnaro (Italia), Aprile 2013.
- “Hadronic Spectroscopy”, Ferrara international Niccolò Cabeo School, Ferrara (Italia), Maggio 2012.
- “Introduction to Particle Accelerators ”, E.Steffens, Ferrara (Italia), Maggio 2011.

Attività di divulgazione e Terza missione

- 2023 - oggi: Pint of Science (INFN CC3M): Responsabile INFN per la sezione di Padova dal luglio 2023, Coordinatrice del gruppo “Atom to Galaxies” e social media manager a Padova.
- 2023 - oggi: HEPscape (INFN CC3M): Speaker e organizzatrice delle "escape rooms" a tema fisica delle alte energie.
- 2013 - 2019, 2023 - oggi: Tutor presso CERN International Masterclasses.
- 2017 - 2020, 2023 - oggi : Membro dello Staff della Notte Europea dei Ricercatori a Padova.
- 2021 - 2023: Speaker per “STE(A)M IT”, progetto europeo mirato ad ampliare la conoscenza degli studenti delle scuole primarie e secondarie riguardo alle carriere STEM.
- 2017 - 2023: Membro dello staff di “Pint Of Science”. Coordinatrice del gruppo “Atom to Galaxies” e social media manager a Padova.
- 2019: Tutor at ”Outreach-Radiolab. La ricerca a casa tua”. Attività di divulgazione INFN per le scuole secondarie superiori, focalizzata sulla misura della concentrazione di radon sul territorio.
- 2018 - 2020: Amministratore della pagina web di LHCb del sito del Dipartimento di Fisica G. Galilei (Padova).
- Giugno 2017: Tutor del progetto “Estage”: stage organizzato presso Dipartimento di Fisica e Astronomia dell’Università di Padova, rivolto agli studenti della scuola secondaria superiore. Titolo del progetto: “Detection of muon derived by cosmic rays using silicon detectors”.
- Giugno 2015: Tutor del progetto “Estage”. Titolo del progetto: “Detection of muon derived by cosmic rays using silicon detectors”.

Pubblicazioni

- Autore di più di 600 articoli pubblicati su rivista con revisione paritaria:
 - * Web of Science (10/12/2025):
 - citations: 24476;
 - h-index: 75
 - * Scopus (10/12/2025):
 - citations: 32846;
 - h-index: 84.

Data: 10/12/2025

Firma:

Lupato Anna

Publicazioni di Anna Lupato

- [1] A. Lupato, “Study of semitauonic and semimuonic $\Lambda_b^0 \rightarrow \Lambda_c^{*+} l^- \bar{\nu}_l$ decays at LHCb,” CERN-THESIS-2017-361 .
- [2] G. Ciezarek, A. Lupato, M. Rotondo and M. Vesterinen, “Reconstruction of semileptonically decaying beauty hadrons produced in high energy pp collisions,” JHEP **02** (2017), 021 doi:10.1007/JHEP02(2017)021 [arXiv:1611.08522 [hep-ex]].
- [3] C. Accettura *et al.* [MuCoL], “MuCol Milestone Report No. 5: Preliminary Parameters,” doi:10.5281/zenodo.13970100 [arXiv:2411.02966 [physics.acc-ph]].
- [4] R. Aaij *et al.* [LHCb], “Inclusive B-meson flavour-tagging algorithm at LHCb,” JHEP **11** (2025), 041 doi:10.1007/JHEP11(2025)041 [arXiv:2508.20180 [hep-ex]].
- [5] R. Aaij *et al.* [LHCb], “Measurement of branching fractions and CP asymmetries in $\Lambda_b^0 (\Xi_b^0) \rightarrow p K_S^0 h^-$ decays,” JHEP **10** (2025), 169 doi:10.1007/JHEP10(2025)169 [arXiv:2508.17836 [hep-ex]].
- [6] R. Aaij *et al.* [LHCb], “Deuteron identification via time of flight with LHCb,” Eur. Phys. J. C **85** (2025) no.11, 1329 doi:10.1140/epjc/s10052-025-14776-9 [arXiv:2508.06305 [hep-ex]].
- [7] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $\Xi_c^+ \rightarrow p K^- \pi^+$ decay and Ξ_c^+ baryon polarization measurement in semileptonic beauty-hadron decays,” Phys. Rev. D **112** (2025) no.9, 092003 doi:10.1103/gcft-fgp1 [arXiv:2508.00492 [hep-ex]].
- [8] R. Aaij *et al.* [LHCb], “Search for the decay $B^0 \rightarrow \phi \phi$,” JHEP **12** (2025), 026 doi:10.1007/JHEP12(2025)026 [arXiv:2507.20945 [hep-ex]].
- [9] R. Aaij *et al.* [LHCb], “Improved measurement of η/η' mixing in $B_{(s)}^0 \rightarrow J/\psi \eta^{(\prime)}$ decays,” JHEP **10** (2025), 113 doi:10.1007/JHEP10(2025)113 [arXiv:2507.13914 [hep-ex]].
- [10] R. Aaij *et al.* [LHCb], “Precision measurement of the Ξ_b^0 baryon lifetime,” Phys. Rev. D **112** (2025) no.5, 052012 doi:10.1103/sllb-p3j8 [arXiv:2507.12402 [hep-ex]].
- [11] R. Aaij *et al.* [LHCb], “First observation of the $\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^- K^+ K^-$ decay and search for pentaquarks in the $\Lambda_c^+ D_s^-$ system,” Phys. Rev. D **112** (2025) no.5, 052013 doi:10.1103/b28d-z2xc [arXiv:2507.10713 [hep-ex]].
- [12] R. Aaij *et al.* [LHCb], “Study of $B_c(1P)^+$ states in the $B_c + \gamma$ mass spectrum,” Phys. Rev. D **112** (2025) no.11, 112003 doi:10.1103/1d49-q8h4 [arXiv:2507.02142 [hep-ex]].
- [13] R. Aaij *et al.* [LHCb], “Observation of Orbitally Excited B_c^+ States,” Phys. Rev. Lett. **135** (2025) no.23, 231902 doi:10.1103/fc8j-tb8k [arXiv:2507.02149 [hep-ex]].
- [14] R. Aaij *et al.* [LHCb], “Updated measurement of CP violation and polarisation in $B_s^0 \rightarrow J/\psi \bar{K}^*(892)^0$ decays,” JHEP **10** (2025), 173 doi:10.1007/JHEP10(2025)173 [arXiv:2506.22090 [hep-ex]].
- [15] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour-violating decays $B^0 \rightarrow K^{*0} \tau e$,” JHEP **11** (2025), 172 doi:10.1007/JHEP11(2025)172 [arXiv:2506.15347 [hep-ex]].

- [16] R. Aaij *et al.* [LHCb], “Measurement of the Ω_c^0 and Ξ_c^0 baryon lifetimes using hadronic b-baryon decays,” JHEP **09** (2025), 157 doi:10.1007/JHEP09(2025)157 [arXiv:2506.13334 [hep-ex]].
- [17] R. Aaij *et al.* [LHCb], “Measurement of $\psi(2S)$ to J/ψ cross-section ratio as function of multiplicity in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” JHEP **11** (2025), 169 doi:10.1007/JHEP11(2025)169 [arXiv:2506.08624 [nucl-ex]].
- [18] R. Aaij *et al.* [LHCb], “Coherent photoproduction of ρ^0 , ω and excited vector mesons in ultra-peripheral PbPb collisions,” JHEP **11** (2025), 103 doi:10.1007/JHEP11(2025)103 [arXiv:2506.06250 [nucl-ex]].
- [19] R. Aaij *et al.* [LHCb], “Three-pion Bose-Einstein correlations measured in proton-proton collisions,” JHEP **08** (2025), 174 doi:10.1007/JHEP08(2025)174 [arXiv:2506.03072 [hep-ex]].
- [20] R. Aaij *et al.* [LHCb], “Measurement of the Lund plane for light- and beauty-quark jets,” Phys. Rev. D **112** (2025) no.7, 072015 doi:10.1103/r16d-b4my [arXiv:2505.23530 [hep-ex]].
- [21] R. Aaij *et al.* [LHCb], “Measurement of the Z-Boson Mass,” Phys. Rev. Lett. **135** (2025) no.16, 161802 doi:10.1103/ydn7-qx1d [arXiv:2505.15582 [hep-ex]].
- [22] R. Aaij *et al.* [LHCb], “Measurements of charmed meson and antimeson production asymmetries at $\sqrt{s} = 13.6$ TeV,” JHEP **10** (2025), 050 doi:10.1007/JHEP10(2025)050 [arXiv:2505.14494 [hep-ex]].
- [23] R. Aaij *et al.* [LHCb], “First measurement of b-jet mass with and without grooming,” Phys. Lett. B **869** (2025), 139854 doi:10.1016/j.physletb.2025.139854 [arXiv:2505.11955 [hep-ex]].
- [24] R. Aaij *et al.* [LHCb], “Rapidity and multiplicity dependence of charged-particle flow in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” JHEP **10** (2025), 124 doi:10.1007/JHEP10(2025)124 [arXiv:2505.09273 [nucl-ex]].
- [25] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction ratio R_K at large dilepton invariant mass,” JHEP **07** (2025), 198 doi:10.1007/JHEP07(2025)198 [arXiv:2505.03483 [hep-ex]].
- [26] C. Accettura *et al.* [International Muon Collider], [arXiv:2504.21417 [physics.acc-ph]].
- [27] R. Aaij *et al.* [LHCb], “Observation of the decay $B_s^0 \rightarrow K^0 p \bar{p}$ and measurement of the $B_{(s)}^0 \rightarrow K^0 p \bar{p}$ branching fractions,” JHEP **07** (2025), 121 doi:10.1007/JHEP07(2025)121 [arXiv:2504.21269 [hep-ex]].
- [28] R. Aaij *et al.* [LHCb], “Observation of the very rare $\Sigma^+ \rightarrow p \mu^+ \mu^-$ decay,” Phys. Rev. Lett. **135** (2025) no.5, 051801 doi:10.1103/r3v2-kmmp [arXiv:2504.06096 [hep-ex]].
- [29] R. Aaij *et al.* [LHCb], “Angular analysis of the decay $B_s^0 \rightarrow \phi e^+ e^-$,” JHEP **07** (2025), 069 doi:10.1007/JHEP07(2025)069 [arXiv:2504.06346 [hep-ex]].
- [30] R. Aaij *et al.* [LHCb], “Observation of the doubly-charmed-baryon decay $\Xi_{cc}^{++} \rightarrow \Xi_c^0 \pi^+ \pi^+$,” JHEP **10** (2025), 136 doi:10.1007/JHEP10(2025)136 [arXiv:2504.05063 [hep-ex]].
- [31] R. Aaij *et al.* [LHCb], “Search for the $B_c^+ \rightarrow \chi_{c1}(3872) \pi^+$ decay,” JHEP **06** (2025), 013 doi:10.1007/jhep06(2025)013 [arXiv:2503.20039 [hep-ex]].
- [32] R. Aaij *et al.* [LHCb], “Observation of charge-parity symmetry breaking in baryon decays,” Nature **643** (2025) no.8074, 1223-1228 doi:10.1038/s41586-025-09119-3 [arXiv:2503.16954 [hep-ex]].
- [33] R. Aaij *et al.* [LHCb], “Branching fraction measurement of the decay $B^+ \rightarrow \psi(2S) \phi(1020) K^+$,” Phys. Rev. D **111** (2025) no.9, 092008 doi:10.1103/PhysRevD.111.092008 [arXiv:2503.02711 [hep-ex]].
- [34] R. Aaij *et al.* [LHCb], “Observation of a New Charmed Baryon Decaying to $\Xi_c^+ \pi^- \pi^+$,” Phys. Rev. Lett. **135** (2025) no.16, 161901 doi:10.1103/gghl-m6fm [arXiv:2502.18987 [hep-ex]].

- [35] R. Aaij *et al.* [LHCb], “Angular analysis of $B^0 \rightarrow K^{*0} e^+ e^-$ decays,” JHEP **06** (2025), 140 doi:10.1007/JHEP06(2025)140 [arXiv:2502.10291 [hep-ex]].
- [36] R. Aaij *et al.* [LHCb], “Search for resonance-enhanced CP and angular asymmetries in the $\Lambda_c^+ \rightarrow p \mu^+ \mu^-$ decay at LHCb,” Phys. Rev. D **111** (2025) no.9, L091102 doi:10.1103/PhysRevD.111.L091102 [arXiv:2502.04013 [hep-ex]].
- [37] R. Aaij *et al.* [LHCb], “Evidence for $B \rightarrow D^{*0} \tau^+ \nu \tau^-$ Decays,” Phys. Rev. Lett. **135** (2025) no.2, 021802 doi:10.1103/rj9h-n4w1 [arXiv:2501.14943 [hep-ex]].
- [38] R. Aaij *et al.* [LHCb], “Observation of the $\Lambda_b^0 \rightarrow J/\psi \Xi^- K^+$ and $\Xi_b^0 \rightarrow J/\psi \Xi^- \pi^+$ decays,” Eur. Phys. J. C **85** (2025) no.7, 812 doi:10.1140/epjc/s10052-025-14129-6 [arXiv:2501.12779 [hep-ex]].
- [39] R. Aaij *et al.* [LHCb], “Measurement of the multiplicity dependence of Υ production ratios in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **05** (2025), 011 doi:10.1007/JHEP05(2025)011 [arXiv:2501.12611 [hep-ex]].
- [40] R. Aaij *et al.* [LHCb], “Search for charge-parity violation in semileptonically tagged $D^0 \rightarrow K^+ \pi^-$ decays,” JHEP **03** (2025), 149 doi:10.1007/JHEP03(2025)149 [arXiv:2501.11635 [hep-ex]].
- [41] R. Aaij *et al.* [LHCb], “Study of light-meson resonances decaying to $KS^0 K \pi$ in the $B \rightarrow (KS^0 K \pi) K$ channels,” Phys. Rev. D **111** (2025) no.9, 092009 doi:10.1103/PhysRevD.111.092009 [arXiv:2501.06483 [hep-ex]].
- [42] F. CAVALLARI, S. Ajmal, B. Argiento, M. E. Ascioti, P. Astone, P. Azzi, C. Basile, M. Bauce, A. Betti and D. Boccanfuso, *et al.* “Escape Rooms as a tool for science outreach: the HEPscape! experience,” PoS **LHCP2024** (2025), 143 doi:10.22323/1.478.0143
- [43] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $B_s^0 \rightarrow D_s^\mp K^\pm$ decays,” JHEP **03** (2025), 139 doi:10.1007/JHEP03(2025)139 [arXiv:2412.14074 [hep-ex]].
- [44] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries in $\Lambda_b^0 \rightarrow p h^-$ decays,” Phys. Rev. D **111** (2025) no.9, 092004 doi:10.1103/PhysRevD.111.092004 [arXiv:2412.13958 [hep-ex]].
- [45] R. Aaij *et al.* [LHCb], “Test of lepton flavour universality with $B^+ \rightarrow K^+ \pi^+ \pi^- \ell^+ \ell^-$ decays,” Phys. Rev. Lett. **134** (2025) no.18, 181803 doi:10.1103/PhysRevLett.134.181803 [arXiv:2412.11645 [hep-ex]].
- [46] R. Aaij *et al.* [LHCb], “Search for D^0 meson decays to $\pi^+ \pi^- e^+ e^-$ and $K^+ K^- e^+ e^-$ final states,” Phys. Rev. D **111** (2025) no.9, L091101 doi:10.1103/PhysRevD.111.L091101 [arXiv:2412.09414 [hep-ex]].
- [47] R. Aaij *et al.* [LHCb], “Observation of the Open-Charmed Tetraquark Candidate $T_{cs}^{*0}(2870)0$ in the $B \rightarrow D-D^0 K S^0$ Decay,” Phys. Rev. Lett. **134** (2025) no.10, 101901 doi:10.1103/PhysRevLett.134.101901 [arXiv:2411.19781 [hep-ex]].
- [48] R. Aaij *et al.* [LHCb], “Study of Λ_b^0 and Ξ_b^0 Decays to $\Lambda h^+ h'^-$ and Evidence for CP Violation in $\Lambda_b^0 \rightarrow \Lambda K^+ K^-$ Decays,” Phys. Rev. Lett. **134** (2025) no.10, 101802 doi:10.1103/PhysRevLett.134.101802 [arXiv:2411.15441 [hep-ex]].
- [49] R. Aaij *et al.* [LHCb], “First Evidence for Direct CP Violation in Beauty to Charmonium Decays,” Phys. Rev. Lett. **134** (2025) no.10, 101801 doi:10.1103/PhysRevLett.134.101801 [arXiv:2411.12178 [hep-ex]].
- [50] R. Aaij *et al.* [LHCb], “Constraints on the photon polarisation in $b \rightarrow s \gamma$ transitions using $B_s^0 \rightarrow \phi e^+ e^-$ decays,” JHEP **03** (2025), 047 doi:10.1007/JHEP03(2025)047 [arXiv:2411.10219 [hep-ex]].
- [51] R. Aaij *et al.* [LHCb], “Measurement of $\phi(1020)$ meson production in fixed-target pNe collisions at $\sqrt{s_{NN}} = 68.5$ GeV,” JHEP **03** (2025), 151 doi:10.1007/JHEP03(2025)151 [arXiv:2411.09343 [hep-ex]].

- [52] R. Aaij *et al.* [LHCb], “Measurement of the $\psi(2S)$ to J/ψ cross-section ratio as a function of centrality in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV,” JHEP **07** (2025), 235 doi:10.1007/JHEP07(2025)235 [arXiv:2411.05669 [nucl-ex]].
- [53] C. Accettura *et al.* [MuCoL], “MuCol Milestone Report No. 5: Preliminary Parameters,” doi:10.5281/zenodo.13970100 [arXiv:2411.02966 [physics.acc-ph]].
- [54] R. Aaij *et al.* [LHCb], Sci. Bull. **70** (2025), 1432-1444 doi:10.1016/j.scib.2025.02.025 [arXiv:2411.03399 [hep-ex]].
- [55] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ in $B \rightarrow DK^*(892)$ decays,” JHEP **02** (2025), 113 doi:10.1007/JHEP02(2025)113 [arXiv:2410.21115 [hep-ex]].
- [56] R. Aaij *et al.* [LHCb], “Measurements of $\psi(2S)$ and $\chi_{c1}(3872)$ production within fully reconstructed jets,” Eur. Phys. J. C **85** (2025) no.5, 562 doi:10.1140/epjc/s10052-025-13852-4 [arXiv:2410.18018 [hep-ex]].
- [57] R. Aaij *et al.* [LHCb], “Test of Lepton Flavor Universality with $B_s^0 \rightarrow \phi \ell^+ \ell^-$ Decays,” Phys. Rev. Lett. **134** (2025) no.12, 121803 doi:10.1103/PhysRevLett.134.121803 [arXiv:2410.13748 [hep-ex]].
- [58] R. Aaij *et al.* [LHCb], “Measurement of the effective leptonic weak mixing angle,” JHEP **12** (2024), 026 doi:10.1007/JHEP12(2024)026 [arXiv:2410.02502 [hep-ex]].
- [59] R. Aaij *et al.* [LHCb], “Search for $B_{(s)}^{*0} \rightarrow \mu^+ \mu^-$ in $B_c^+ \rightarrow \pi^+ \mu^+ \mu^-$ decays,” Eur. Phys. J. C **85** (2025) no.1, 20 doi:10.1140/epjc/s10052-024-13573-0 [arXiv:2409.17209 [hep-ex]].
- [60] R. Aaij *et al.* [LHCb], “Analysis of $\Lambda_b^0 \rightarrow p K \mu^+ \mu^-$ decays,” JHEP **12** (2024), 147 doi:10.1007/JHEP12(2024)147 [arXiv:2409.12629 [hep-ex]].
- [61] R. Aaij *et al.* [LHCb], “First Determination of the Spin-Parity of $\Xi_c(3055)^+, 0$ Baryons,” Phys. Rev. Lett. **134** (2025) no.8, 8 doi:10.1103/PhysRevLett.134.081901 [arXiv:2409.05440 [hep-ex]].
- [62] R. Aaij *et al.* [LHCb], “Measurement of exclusive J/ψ and $\psi(2S)$ production at $\sqrt{s} = 13$ TeV,” SciPost Phys. **18** (2025) no.2, 071 doi:10.21468/SciPostPhys.18.2.071 [arXiv:2409.03496 [hep-ex]].
- [63] R. Aaij *et al.* [LHCb], “Measurement of Λ_b^0 , Λ_c^+ , and Λ Decay Parameters Using $\Lambda_b^0 \rightarrow \Lambda_c^+ h^-$ Decays,” Phys. Rev. Lett. **133** (2024) no.26, 261804 doi:10.1103/PhysRevLett.133.261804 [arXiv:2409.02759 [hep-ex]].
- [64] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow D^+ D^-$ and $B_s^0 \rightarrow D_s^+ D_s^-$ decays,” JHEP **01** (2025), 061 doi:10.1007/JHEP01(2025)061 [arXiv:2409.03009 [hep-ex]].
- [65] R. Aaij *et al.* [LHCb], “Measurement of CP Violation Observables in $D^+ \rightarrow K^- K^+ \pi^+$ Decays,” Phys. Rev. Lett. **133** (2024) no.25, 251801 doi:10.1103/PhysRevLett.133.251801 [arXiv:2409.01414 [hep-ex]].
- [66] R. Aaij *et al.* [LHCb], “Study of the rare decay $J/\psi \rightarrow \mu^+ \mu^- \mu^+ \mu^-$,” JHEP **12** (2024), 062 doi:10.1007/JHEP12(2024)062 [arXiv:2408.16646 [hep-ex]].
- [67] R. Aaij *et al.* [LHCb], “Observation of muonic Dalitz decays of charm mesons and precise spectroscopy of hidden-beauty states,” doi:10.1007/JHEP10(2024)122 [arXiv:2408.05134 [hep-ex]].
- [68] R. Aaij *et al.* [LHCb], “Measurement of D^0 - $D^{\bar{0}}$ mixing and search for CP violation with $D^0 \rightarrow K^+ \pi^-$ decays,” Phys. Rev. D **111** (2025) no.1, 012001 doi:10.1103/PhysRevD.111.012001 [arXiv:2407.18001 [hep-ex]].
- [69] R. Aaij *et al.* [LHCb], “Study of charmonium production via the decay to $p\bar{p}$ at $\sqrt{s} = 13$ TeV,” Eur. Phys. J. C **84** (2024) no.12, 1274 doi:10.1140/epjc/s10052-024-13478-y [arXiv:2407.14261 [hep-ex]].

- [70] R. Aaij *et al.* [LHCb], “Observation of Exotic $J/\psi\phi$ Resonant Structure in Diffractive Processes in Proton-Proton Collisions,” *Phys. Rev. Lett.* **134** (2025) no.3, 031902 doi:10.1103/PhysRevLett.134.031902 [arXiv:2407.14301 [hep-ex]].
- [71] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B^+ \rightarrow \psi(2S)K^+\pi^+\pi$ decays,” *JHEP* **01** (2025), 054 doi:10.1007/JHEP01(2025)054 [arXiv:2407.12475 [hep-ex]].
- [72] C. Accettura *et al.* [International Muon Collider], “Interim report for the International Muon Collider Collaboration (IMCC),” CERN Yellow Rep. Monogr. **2/2024** (2024), 1 CERN, 2024, ISBN 978-92-9083-667-4, 978-92-9083-668-1 doi:10.23731/CYRM-2024-002 [arXiv:2407.12450 [physics.acc-ph]].
- [73] R. Aaij *et al.* [LHCb], “Search for the rare decay of charmed baryon Λ_c^+ into the $p\mu+\mu^-$ final state,” *Phys. Rev. D* **110** (2024) no.5, 052007 doi:10.1103/PhysRevD.110.052007 [arXiv:2407.11474 [hep-ex]].
- [74] R. Aaij *et al.* [LHCb], “Probing the nature of the $\chi_{c1}(3872)$ state using radiative decays,” *JHEP* **11** (2024), 121 doi:10.1007/JHEP11(2024)121 [arXiv:2406.17006 [hep-ex]].
- [75] R. Aaij *et al.* [LHCb], “Precision measurement of the Ξ_b^- baryon lifetime,” *Phys. Rev. D* **110** (2024) no.7, 072002 doi:10.1103/PhysRevD.110.072002 [arXiv:2406.12111 [hep-ex]].
- [76] R. Aaij *et al.* [LHCb], “Observation of New Charmonium or Charmoniumlike States in $B^+ \rightarrow D^{*\pm}D^\mp K^+$ Decays,” *Phys. Rev. Lett.* **133** (2024) no.13, 131902 doi:10.1103/PhysRevLett.133.131902 [arXiv:2406.03156 [hep-ex]].
- [77] R. Aaij *et al.* [LHCb], “Measurement of the Branching Fraction Ratios $R(D^+)$ and $R(D^{*+})$ Using Muonic τ Decays,” *Phys. Rev. Lett.* **134** (2025) no.6, 061801 doi:10.1103/PhysRevLett.134.061801 [arXiv:2406.03387 [hep-ex]].
- [78] R. Aaij *et al.* [LHCb], “Amplitude analysis of the radiative decay $B_s^0 \rightarrow K^+K\gamma$,” *JHEP* **08** (2024), 093 doi:10.1007/JHEP08(2024)093 [arXiv:2406.00235 [hep-ex]].
- [79] R. Aaij *et al.* [LHCb], “Comprehensive analysis of local and nonlocal amplitudes in the $B^0 \rightarrow K^{*0}\mu^+\mu$ decay,” *JHEP* **09** (2024), 026 doi:10.1007/JHEP09(2024)026 [arXiv:2405.17347 [hep-ex]].
- [80] R. Aaij *et al.* [LHCb], “Study of b-hadron decays to $\Lambda_c^+ h^- h'^-$ final states,” *JHEP* **08** (2024), 132 doi:10.1007/JHEP08(2024)132 [arXiv:2405.12688 [hep-ex]].
- [81] R. Aaij *et al.* [LHCb], “Search for the lepton-flavor violating decay $B_s^0 \rightarrow \phi\mu^\pm\tau^\mp$,” *Phys. Rev. D* **110** (2024) no.7, 7 doi:10.1103/PhysRevD.110.072014 [arXiv:2405.13103 [hep-ex]].
- [82] R. Aaij *et al.* [LHCb], “Transverse polarization measurement of Λ hyperons in pNe collisions at $\sqrt{s_{NN}} = 68.4$ GeV with the LHCb detector,” *JHEP* **09** (2024), 082 doi:10.1007/JHEP09(2024)082 [arXiv:2405.11324 [hep-ex]].
- [83] R. Aaij *et al.* [LHCb], “Search for Time-Dependent CP Violation in $D^0 \rightarrow \pi^+\pi^-\pi^0$ Decays,” *Phys. Rev. Lett.* **133** (2024) no.10, 101803 doi:10.1103/PhysRevLett.133.101803 [arXiv:2405.06556 [hep-ex]].
- [84] R. Aaij *et al.* [LHCb], “First observation of $\Lambda_b^0 \rightarrow \Sigma_c^{(*)++} D^{(*)-} K^-$ decays,” *Phys. Rev. D* **110** (2024) no.3, L031104 doi:10.1103/PhysRevD.110.L031104 [arXiv:2404.19510 [hep-ex]].
- [85] R. Aaij *et al.* [LHCb], “Amplitude analysis and branching fraction measurement of $B^+ \rightarrow D^{*-} D_s^+ \pi^+$ decays,” *JHEP* **08** (2024), 165 doi:10.1007/JHEP08(2024)165 [arXiv:2405.00098 [hep-ex]].
- [86] R. Aaij *et al.* [LHCb], “Search for prompt production of pentaquarks in charm hadron final states,” *Phys. Rev. D* **110** (2024) no.3, 032001 doi:10.1103/PhysRevD.110.032001 [arXiv:2404.07131 [hep-ex]].

- [87] R. Aaij *et al.* [LHCb], “Search for the $B_s^0 \rightarrow \mu^+ \mu^- \gamma$ decay,” JHEP **07** (2024), 101 doi:10.1007/JHEP07(2024)101 [arXiv:2404.03375 [hep-ex]].
- [88] R. Aaij *et al.* [LHCb], “Tracking of charged particles with nanosecond lifetimes at LHCb,” Eur. Phys. J. C **84** (2024) no.7, 761 doi:10.1140/epjc/s10052-024-12993-2 [arXiv:2403.09483 [hep-ex]].
- [89] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $\Lambda_b^0 \rightarrow p K^-$ decay,” JHEP **06** (2024), 098 doi:10.1007/JHEP06(2024)098 [arXiv:2403.03710 [hep-ex]].
- [90] R. Aaij *et al.* [LHCb], “First observation of the $\Lambda_b^0 \rightarrow D^+ D \Lambda$ decay,” JHEP **07** (2024), 140 doi:10.1007/JHEP07(2024)140 [arXiv:2403.03586 [hep-ex]].
- [91] R. Aaij *et al.* [LHCb], “Modification of $\chi_{c1}(3872)$ and $\psi(2S)$ Production in pPb Collisions at $\sqrt{s_{NN}}=8.16$ TeV,” Phys. Rev. Lett. **132** (2024) no.24, 242301 doi:10.1103/PhysRevLett.132.242301 [arXiv:2402.14975 [hep-ex]].
- [92] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction of $B^0 \rightarrow J/\psi \pi^0$ decays,” JHEP **05** (2024), 065 doi:10.1007/JHEP05(2024)065 [arXiv:2402.05528 [hep-ex]].
- [93] R. Aaij *et al.* [LHCb], “Observation of the $B_c^+ \rightarrow J/\psi \pi^+ \pi^0$ decay,” JHEP **04** (2024), 151 doi:10.1007/JHEP04(2024)151 [arXiv:2402.05523 [hep-ex]].
- [94] R. Aaij *et al.* [LHCb], “Measurements of the branching fraction ratio $\mathcal{B}(\phi \rightarrow \mu^+ \mu^-) / \mathcal{B}(\phi \rightarrow e^+ e^-)$ with charm meson decays,” JHEP **05** (2024), 293 doi:10.1007/JHEP05(2024)293 [arXiv:2402.01336 [hep-ex]].
- [95] R. Aaij *et al.* [LHCb], “Study of CP violation in $B^0 \rightarrow DK(892)^0$ decays with $D \rightarrow K\pi(\pi\pi)$, $\pi\pi(\pi\pi)$, and KK final states,” JHEP **05** (2024), 025 doi:10.1007/JHEP05(2024)025 [arXiv:2401.17934 [hep-ex]].
- [96] R. Aaij *et al.* [LHCb], “Prompt and nonprompt $\psi(2S)$ production in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” JHEP **04** (2024), 111 doi:10.1007/JHEP04(2024)111 [arXiv:2401.11342 [hep-ex]].
- [97] R. Aaij *et al.* [LHCb], “Multiplicity dependence of $\sigma_{(2S)}/\sigma_{J/\psi}$ in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **05** (2024), 243 doi:10.1007/JHEP05(2024)243 [arXiv:2312.15201 [hep-ex]].
- [98] R. Aaij *et al.* [LHCb], “Study of $B_c^+ \rightarrow \chi_{c1} \pi^+$ decays,” JHEP **02** (2024), 173 doi:10.1007/JHEP02(2024)173 [arXiv:2312.12987 [hep-ex]].
- [99] R. Aaij *et al.* [LHCb], “Search for $B_c^+ \rightarrow \pi^+ \mu^+ \mu^-$ decays and measurement of the branching fraction ratio $\mathcal{B}(B_c^+ \rightarrow \psi(2S) \pi^+) / \mathcal{B}(B_c^+ \rightarrow J/\psi \pi^+)$,” Eur. Phys. J. C **84** (2024) no.5, 468 doi:10.1140/epjc/s10052-024-12669-x [arXiv:2312.12228 [hep-ex]].
- [100] R. Aaij *et al.* [LHCb], “Amplitude Analysis of the $B^0 \rightarrow K^* 0 \mu^+ \mu^-$ Decay,” Phys. Rev. Lett. **132** (2024) no.13, 131801 doi:10.1103/PhysRevLett.132.131801 [arXiv:2312.09115 [hep-ex]].
- [101] R. Aaij *et al.* [LHCb], “Determination of short- and long-distance contributions in $B^0 \rightarrow K^* 0 \mu^+ \mu^-$ decays,” Phys. Rev. D **109** (2024) no.5, 052009 doi:10.1103/PhysRevD.109.052009 [arXiv:2312.09102 [hep-ex]].
- [102] R. Aaij *et al.* [LHCb], “Momentum scale calibration of the LHCb spectrometer,” JINST **19** (2024) no.02, P02008 doi:10.1088/1748-0221/19/02/P02008 [arXiv:2312.01772 [hep-ex]].
- [103] R. Aaij *et al.* [LHCb], “Measurement of associated J/ψ - $\psi(2S)$ production cross-section in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **05** (2024), 259 doi:10.1007/JHEP05(2024)259 [arXiv:2311.15921 [hep-ex]].
- [104] R. Aaij *et al.* [LHCb], “Observation of $\Lambda_b^0 \rightarrow \Lambda_c^+ \bar{D}^{(*)0} K^-$ and $\Lambda_b^0 \rightarrow \Lambda_c^+ D_s^{*-0}$ decays,” Eur. Phys. J. C **84** (2024) no.6, 575 doi:10.1140/epjc/s10052-024-12752-3 [arXiv:2311.14088 [hep-ex]].

- [105] R. Aaij *et al.* [LHCb], “Measurement of J/ψ -pair production in pp collisions at $\sqrt{s} = 13$ TeV and study of gluon transverse-momentum dependent PDFs,” *JHEP* **03** (2024), 088 doi:10.1007/JHEP03(2024)088 [arXiv:2311.14085 [hep-ex]].
- [106] R. Aaij *et al.* [LHCb], “A model-independent measurement of the CKM angle γ in partially reconstructed $B \rightarrow D^*h$ decays with $D \rightarrow K_S^0 h^+ h^-$ ($h = \pi, K$),” *JHEP* **02** (2024), 118 doi:10.1007/JHEP02(2024)118 [arXiv:2311.10434 [hep-ex]].
- [107] R. Aaij *et al.* [LHCb], “Measurement of forward charged hadron flow harmonics in peripheral PbPb collisions at $\sqrt{s_{NN}}=5.02$ TeV with the LHCb detector,” *Phys. Rev. C* **109** (2024) no.5, 054908 doi:10.1103/PhysRevC.109.054908 [arXiv:2311.09985 [nucl-ex]].
- [108] R. Aaij *et al.* [LHCb], “Observation of strangeness enhancement with charmed mesons in high-multiplicity pPb collisions at $\sqrt{s_{NN}}=8.16$ TeV,” *Phys. Rev. D* **110** (2024) no.3, L031105 doi:10.1103/PhysRevD.110.L031105 [arXiv:2311.08490 [hep-ex]].
- [109] R. Aaij *et al.* [LHCb], “Measurement of the D^* longitudinal polarization in $B^0 \rightarrow D^{*-} \tau^+ \nu_\tau$ decays,” *Phys. Rev. D* **110** (2024) no.9, 092007 doi:10.1103/PhysRevD.110.092007 [arXiv:2311.05224 [hep-ex]].
- [110] R. Aaij *et al.* [LHCb], “Curvature-bias corrections using a pseudomass method,” *JINST* **19** (2024) no.03, P03010 doi:10.1088/1748-0221/19/03/P03010 [arXiv:2311.04670 [hep-ex]].
- [111] R. Aaij *et al.* [LHCb], “Fraction of χ_c Decays in Prompt J/ψ Production Measured in pPb Collisions at $\sqrt{s_{NN}}=8.16$ TeV,” *Phys. Rev. Lett.* **132** (2024) no.10, 102302 doi:10.1103/PhysRevLett.132.102302 [arXiv:2311.01562 [hep-ex]].
- [112] R. Aaij *et al.* [LHCb], “Search for CP violation in the phase space of $D^0 \rightarrow K_S^0 K^\pm \pi^\mp$ decays with the energy test,” *JHEP* **03** (2024), 107 doi:10.1007/JHEP03(2024)107 [arXiv:2310.19397 [hep-ex]].
- [113] R. Aaij *et al.* [LHCb], “Production of η and η' mesons in pp and pPb collisions,” *Phys. Rev. C* **109** (2024) no.2, 024907 doi:10.1103/PhysRevC.109.024907 [arXiv:2310.17326 [nucl-ex]].
- [114] R. Aaij *et al.* [LHCb], “Observation of $\Xi_b^0 \rightarrow \Xi_c^+ D_s^-$ and $\Xi_b^- \rightarrow \Xi_c^0 D_s^-$ decays,” *Eur. Phys. J. C* **84** (2024) no.3, 237 doi:10.1140/epjc/s10052-024-12443-z [arXiv:2310.13546 [hep-ex]].
- [115] R. Aaij *et al.* [LHCb], “A measurement of $\Delta\Gamma_s$,” *JHEP* **05** (2024), 253 doi:10.1007/JHEP05(2024)253 [arXiv:2310.12649 [hep-ex]].
- [116] R. Aaij *et al.* [LHCb], “Enhanced Production of Λ_b^0 Baryons in High-Multiplicity pp Collisions at $\sqrt{s}=13$ TeV,” *Phys. Rev. Lett.* **132** (2024) no.8, 081901 doi:10.1103/PhysRevLett.132.081901 [arXiv:2310.12278 [hep-ex]].
- [117] R. Aaij *et al.* [LHCb], “Helium identification with LHCb,” *JINST* **19** (2024) no.02, P02010 doi:10.1088/1748-0221/19/02/P02010 [arXiv:2310.05864 [hep-ex]].
- [118] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ using the $B \rightarrow D^*h$ channels,” *JHEP* **12** (2023), 013 doi:10.1007/JHEP12(2023)013 [arXiv:2310.04277 [hep-ex]].
- [119] R. Aaij *et al.* [LHCb], “Measurement of prompt D^+ and D_s^+ production in pPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV,” *JHEP* **01** (2024), 070 doi:10.1007/JHEP01(2024)070 [arXiv:2309.14206 [hep-ex]].
- [120] R. Aaij *et al.* [LHCb], “Measurement of CP Violation in $B^0 \rightarrow \psi(\rightarrow \ell^+ \ell^-) K_S^0(\rightarrow \pi^+ \pi^-)$ Decays,” *Phys. Rev. Lett.* **132** (2024) no.2, 021801 doi:10.1103/PhysRevLett.132.021801 [arXiv:2309.09728 [hep-ex]].
- [121] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ in the $B^0 \rightarrow DK^{*0}$ channel using self-conjugate $D \rightarrow K_S^0 h^+ h^-$ decays,” *Eur. Phys. J. C* **84** (2024) no.2, 206 doi:10.1140/epjc/s10052-023-12376-z [arXiv:2309.05514 [hep-ex]].

- [122] R. Aaij *et al.* [LHCb], “Measurement of the Z boson production cross-section in pp collisions at $\sqrt{s} = 5.02$ TeV,” JHEP **02** (2024), 070 doi:10.1007/JHEP02(2024)070 [arXiv:2308.12940 [hep-ex]].
- [123] R. Aaij *et al.* [LHCb], “Observation of Cabibbo-Suppressed Two-Body Hadronic Decays and Precision Mass Measurement of the Ω_{c0} Baryon,” Phys. Rev. Lett. **132** (2024) no.8, 081802 doi:10.1103/PhysRevLett.132.081802 [arXiv:2308.08512 [hep-ex]].
- [124] R. Aaij *et al.* [LHCb], “A search for rare $B \rightarrow D\mu^+\mu$ decays,” JHEP **02** (2024), 032 doi:10.1007/JHEP02(2024)032 [arXiv:2308.06162 [hep-ex]].
- [125] I. Bezshyiko *et al.* [LHCb], “Improved Measurement of CP Violation Parameters in $B_{s0} \rightarrow J/\psi K^+K^-$ Decays in the Vicinity of the $\phi(1020)$ Resonance,” Phys. Rev. Lett. **132** (2024) no.5, 051802 doi:10.1103/PhysRevLett.132.051802 [arXiv:2308.01468 [hep-ex]].
- [126] R. Aaij *et al.* [LHCb], “Observation of the decays $B_{(s)}^0 \rightarrow D_{s1}(2536)K$,” JHEP **10** (2023), 106 doi:10.1007/JHEP10(2023)106 [arXiv:2308.00587 [hep-ex]].
- [127] R. Aaij *et al.* [LHCb], “Observation of New Baryons in the $\Xi_b-\pi^+\pi^-$ and $\Xi_b0\pi^+\pi^-$ Systems,” Phys. Rev. Lett. **131** (2023) no.17, 171901 doi:10.1103/PhysRevLett.131.171901 [arXiv:2307.13399 [hep-ex]].
- [128] R. Aaij *et al.* [LHCb], “Observation and branching fraction measurement of the decay $\Xi_b \rightarrow \Lambda_b0\pi^-$,” Phys. Rev. D **108** (2023) no.7, 072002 doi:10.1103/PhysRevD.108.072002 [arXiv:2307.09427 [hep-ex]].
- [129] R. Aaij *et al.* [LHCb], “Search for CP violation in the phase space of $D^0 \rightarrow \pi^-\pi^+\pi^0$ decays with the energy test,” JHEP **09** (2023), 129 [erratum: JHEP **04** (2024), 040] doi:10.1007/JHEP09(2023)129 [arXiv:2306.12746 [hep-ex]].
- [130] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries and branching fraction ratios of B decays to two charm mesons,” JHEP **09** (2023), 202 doi:10.1007/JHEP09(2023)202 [arXiv:2306.09945 [hep-ex]].
- [131] R. Aaij *et al.* [LHCb], “Study of the Bose-Einstein correlations of same-sign pions in proton-lead collisions,” JHEP **09** (2023), 172 doi:10.1007/JHEP09(2023)172 [arXiv:2306.09755 [hep-ex]].
- [132] R. Aaij *et al.* [LHCb], “Evidence for the decays $B^0 \rightarrow \bar{D}^{(*)0}\phi$ and updated measurements of the branching fractions of the $B_s^0 \rightarrow \bar{D}^{(*)0}\phi$ decays,” JHEP **10** (2023), 123 doi:10.1007/JHEP10(2023)123 [arXiv:2306.02768 [hep-ex]].
- [133] R. Aaij *et al.* [LHCb], “Measurement of the mass difference and relative production rate of the Ω_b^- and Ξ_b^- baryons,” Phys. Rev. D **108** (2023) no.5, 5 doi:10.1103/PhysRevD.108.052008 [arXiv:2305.15329 [hep-ex]].
- [134] R. Aaij *et al.* [LHCb], “Associated production of prompt J/ψ and Υ mesons in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **08** (2023), 093 doi:10.1007/JHEP08(2023)093 [arXiv:2305.15580 [hep-ex]].
- [135] R. Aaij *et al.* [LHCb], “The LHCb Upgrade I,” JINST **19** (2024) no.05, P05065 doi:10.1088/1748-0221/19/05/P05065 [arXiv:2305.10515 [hep-ex]].
- [136] R. Aaij *et al.* [LHCb], “Measurement of Ξ_c^+ production in pPb collisions at $\sqrt{s_{NN}}=8.16$ TeV at LHCb,” Phys. Rev. C **109** (2024) no.4, 044901 doi:10.1103/PhysRevC.109.044901 [arXiv:2305.06711 [hep-ex]].
- [137] R. Aaij *et al.* [LHCb], “Test of lepton flavor universality using $B^0 \rightarrow D^{*-}\tau^+\nu_\tau$ decays with hadronic τ channels,” Phys. Rev. D **108** (2023) no.1, 012018 [erratum: Phys. Rev. D **109** (2024) no.11, 119902] doi:10.1103/PhysRevD.108.012018 [arXiv:2305.01463 [hep-ex]].

- [138] R. Aaij *et al.* [LHCb], “Study of charmonium decays to $K_S^0 K \pi$ in the $B \rightarrow (K_S^0 K \pi) K$ channels,” Phys. Rev. D **108** (2023) no.3, 032010 doi:10.1103/PhysRevD.108.032010 [arXiv:2304.14891 [hep-ex]].
- [139] R. Aaij *et al.* [LHCb], “Precision Measurement of CP Violation in the Penguin-Mediated Decay $B_s^0 \rightarrow \phi \phi$,” Phys. Rev. Lett. **131** (2023) no.17, 171802 doi:10.1103/PhysRevLett.131.171802 [arXiv:2304.06198 [hep-ex]].
- [140] R. Aaij *et al.* [LHCb], “Search for $D^{*0}(2007) \rightarrow \mu^+ \mu^-$ in $B^- \rightarrow \pi^- \mu^+ \mu^-$ decays,” Eur. Phys. J. C **83** (2023) no.7, 666 doi:10.1140/epjc/s10052-023-11759-6 [arXiv:2304.01981 [hep-ex]].
- [141] R. Aaij *et al.* [LHCb], “Observation of the $B^+ \rightarrow J/\psi \eta' K^+$ decay,” JHEP **08** (2023), 174 [erratum: JHEP **10** (2023), 150] doi:10.1007/JHEP08(2023)174 [arXiv:2303.09443 [hep-ex]].
- [142] R. Aaij *et al.* [LHCb], “Search for CP violation in $D_{(s)}^+ \rightarrow K^- K^+ K^+$ decays,” JHEP **07** (2023), 067 doi:10.1007/JHEP07(2023)067 [arXiv:2303.04062 [hep-ex]].
- [143] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow \chi_{c1}(3872) \pi^+ \pi^-$ decay,” JHEP **07** (2023), 084 doi:10.1007/JHEP07(2023)084 [arXiv:2302.10629 [hep-ex]].
- [144] R. Aaij *et al.* [LHCb], “Measurement of the $\Lambda_b^0 \rightarrow \Lambda(1520) \mu^+ \mu^-$ Differential Branching Fraction,” Phys. Rev. Lett. **131** (2023) no.15, 151801 doi:10.1103/PhysRevLett.131.151801 [arXiv:2302.08262 [hep-ex]].
- [145] R. Aaij *et al.* [LHCb], “Observation of New Ω_c^0 States Decaying to the $\Xi_c + K^-$ Final State,” Phys. Rev. Lett. **131** (2023) no.13, 131902 doi:10.1103/PhysRevLett.131.131902 [arXiv:2302.04733 [hep-ex]].
- [146] R. Aaij *et al.* [LHCb], “Measurement of the ratios of branching fractions $\mathcal{R}(D^{*0})$ and $\mathcal{R}(D^0)$,” Phys. Rev. Lett. **131** (2023), 111802 doi:10.1103/PhysRevLett.131.111802 [arXiv:2302.02886 [hep-ex]].
- [147] R. Aaij *et al.* [LHCb], “A study of CP violation in the decays $B^\pm \rightarrow [K^+ K^- \pi^+ \pi^-]_D h^\pm$ ($h = K, \pi$) and $B^\pm \rightarrow [\pi^+ \pi^- \pi^+ \pi^-]_D h^\pm$,” Eur. Phys. J. C **83** (2023) no.6, 547 [erratum: Eur. Phys. J. C **83** (2023), 672] doi:10.1140/epjc/s10052-023-11560-5 [arXiv:2301.10328 [hep-ex]].
- [148] R. Aaij *et al.* [LHCb], “ Λ_c^+ polarimetry using the dominant hadronic mode,” JHEP **07** (2023), 228 doi:10.1007/JHEP07(2023)228 [arXiv:2301.07010 [hep-ex]].
- [149] R. Aaij *et al.* [LHCb], “Evidence of a $J/\psi K_S^0$ Structure in $B^0 \rightarrow J/\psi \phi K_S^0$ Decays,” Phys. Rev. Lett. **131** (2023) no.13, 131901 doi:10.1103/PhysRevLett.131.131901 [arXiv:2301.04899 [hep-ex]].
- [150] R. Aaij *et al.* [LHCb], “Measurement of Υ production in pp collisions at $\sqrt{s} = 5$ TeV,” JHEP **07** (2023), 069 doi:10.1007/JHEP07(2023)069 [arXiv:2212.12664 [hep-ex]].
- [151] R. Aaij *et al.* [LHCb], “First observation and branching fraction measurement of the $\Lambda_b^0 \rightarrow D_s^- p$ decay,” JHEP **07** (2023), 075 doi:10.1007/JHEP07(2023)075 [arXiv:2212.12574 [hep-ex]].
- [152] R. Aaij *et al.* [LHCb], “Search for Rare Decays of D^0 Mesons into Two Muons,” Phys. Rev. Lett. **131** (2023) no.4, 041804 doi:10.1103/PhysRevLett.131.041804 [arXiv:2212.11203 [hep-ex]].
- [153] R. Aaij *et al.* [LHCb], “Test of lepton universality in $b \rightarrow s \ell^+ \ell^-$ decays,” Phys. Rev. Lett. **131** (2023) no.5, 051803 doi:10.1103/PhysRevLett.131.051803 [arXiv:2212.09152 [hep-ex]].
- [154] R. Aaij *et al.* [LHCb], “Measurement of lepton universality parameters in $B^+ \rightarrow K^+ \ell^+ \ell^-$ and $B^0 \rightarrow K^{*0} \ell^+ \ell^-$ decays,” Phys. Rev. D **108** (2023) no.3, 032002 doi:10.1103/PhysRevD.108.032002 [arXiv:2212.09153 [hep-ex]].
- [155] R. Aaij *et al.* [LHCb], “Search for the rare decays $W^+ \rightarrow D_s^+ \gamma$ and $Z \rightarrow D^0 \gamma$ at LHCb,” Chin. Phys. C **47** (2023) no.9, 093002 doi:10.1088/1674-1137/aceae9 [arXiv:2212.07120 [hep-ex]].

- [156] R. Aaij *et al.* [LHCb], “Search for $KS(L)0 \rightarrow \mu + \mu - \mu + \mu -$ decays at LHCb,” *Phys. Rev. D* **108** (2023) no.3, L031102 doi:10.1103/PhysRevD.108.L031102 [arXiv:2212.04977 [hep-ex]].
- [157] R. Aaij *et al.* [LHCb], “First Observation of a Doubly Charged Tetraquark and Its Neutral Partner,” *Phys. Rev. Lett.* **131** (2023) no.4, 041902 doi:10.1103/PhysRevLett.131.041902 [arXiv:2212.02716 [hep-ex]].
- [158] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B0 \rightarrow D^- 0Ds + \pi^-$ and $B^+ \rightarrow D^- Ds + \pi^+$ decays,” *Phys. Rev. D* **108** (2023) no.1, 012017 doi:10.1103/PhysRevD.108.012017 [arXiv:2212.02717 [hep-ex]].
- [159] R. Aaij *et al.* [LHCb], “Open charm production and asymmetry in pNe collisions at $\sqrt{s_{NN}} = 68.5$ GeV,” *Eur. Phys. J. C* **83** (2023) no.6, 541 [erratum: *Eur. Phys. J. C* **83** (2023), 708] doi:10.1140/epjc/s10052-023-11641-5 [arXiv:2211.11633 [hep-ex]].
- [160] R. Aaij *et al.* [LHCb], “Charmonium production in pNe collisions at $\sqrt{s_{NN}} = 68.5$ GeV,” *Eur. Phys. J. C* **83** (2023) no.7, 625 doi:10.1140/epjc/s10052-023-11608-6 [arXiv:2211.11645 [hep-ex]].
- [161] R. Aaij *et al.* [LHCb], “ J/ψ and D^0 production in $\sqrt{s_{NN}} = 68.5$ GeV PbNe collisions,” *Eur. Phys. J. C* **83** (2023) no.7, 658 doi:10.1140/epjc/s10052-023-11674-w [arXiv:2211.11652 [hep-ex]].
- [162] R. Aaij *et al.* [LHCb], “Long-lived particle reconstruction downstream of the LHCb magnet,” [arXiv:2211.10920 [hep-ex]].
- [163] R. Aaij *et al.* [LHCb], “Measurement of the Branching Fractions $B(B0 \rightarrow pp^- pp^-)$ and $B(Bs0 \rightarrow pp^- pp^-)$,” *Phys. Rev. Lett.* **131** (2023) no.9, 091901 doi:10.1103/PhysRevLett.131.091901 [arXiv:2211.08847 [hep-ex]].
- [164] R. Aaij *et al.* [LHCb], “First observation of the $B^+ \rightarrow Ds + Ds - K^+$ decay,” *Phys. Rev. D* **108** (2023), 034012 doi:10.1103/PhysRevD.108.034012 [arXiv:2211.05034 [hep-ex]].
- [165] R. Aaij *et al.* [LHCb], “Study of the $B^- \rightarrow \Lambda_c^+ \bar{\Lambda}_c^- K^-$ decay,” *Phys. Rev. D* **108** (2023), 012020 doi:10.1103/PhysRevD.108.012020 [arXiv:2211.00812 [hep-ex]].
- [166] R. Aaij *et al.* [LHCb], “Nuclear Modification Factor of Neutral Pions in the Forward and Backward Regions in p-Pb Collisions,” *Phys. Rev. Lett.* **131** (2023) no.4, 042302 doi:10.1103/PhysRevLett.131.042302
- [167] R. Aaij *et al.* [LHCb], “Observation of a $J/\psi\Lambda$ Resonance Consistent with a Strange Pentaquark Candidate in $B \rightarrow J/\psi\Lambda p^-$ Decays,” *Phys. Rev. Lett.* **131** (2023) no.3, 031901 doi:10.1103/PhysRevLett.131.031901
- [168] R. Aaij *et al.* [LHCb], “Charmonium production in pNe collisions at $\sqrt{s_{NN}} = 68.5$ GeV,” *Eur. Phys. J. C* **83** (2023) no.7, 625 doi:10.1140/epjc/s10052-023-11608-6
- [169] R. Aaij *et al.* [LHCb], “Direct CP violation in charmless three-body decays of B^\pm mesons,” *Phys. Rev. D* **108** (2023) no.1, 012008 doi:10.1103/PhysRevD.108.012008
- [170] R. Aaij *et al.* [LHCb], “Search for the rare hadronic decay $Bs0 \rightarrow pp^-$,” *Phys. Rev. D* **108** (2023) no.1, 012007 doi:10.1103/PhysRevD.108.012007
- [171] R. Aaij *et al.* [LHCb], “Search for direct CP violation in charged charmless $B \rightarrow PV$ decays,” *Phys. Rev. D* **108** (2023) no.1, 012013 doi:10.1103/PhysRevD.108.012013
- [172] R. Aaij *et al.* [LHCb], “Search for CP violation in $D_{(s)}^+ \rightarrow K^- K^+ K^+$ decays,” *JHEP* **07** (2023), 067 doi:10.1007/JHEP07(2023)067 [arXiv:2303.04062 [hep-ex]].
- [173] R. Aaij *et al.* [LHCb], “A study of CP violation in the decays $B^\pm \rightarrow [K^+ K^- \pi^+ \pi^-]_D h^\pm$ ($h = K, \pi$) and $B^\pm \rightarrow [\pi^+ \pi^- \pi^+ \pi^-]_D h^\pm$,” *Eur. Phys. J. C* **83** (2023) no.6, 547 doi:10.1140/epjc/s10052-023-11560-5 [arXiv:2301.10328 [hep-ex]].

- [174] R. Aaij *et al.* [LHCb], “Measurement of Υ production in pp collisions at $\sqrt{s} = 5$ TeV,” JHEP **07** (2023), 069 doi:10.1007/JHEP07(2023)069 [arXiv:2212.12664 [hep-ex]].
- [175] R. Aaij *et al.* [LHCb], “First observation and branching fraction measurement of the $\Lambda_b^0 \rightarrow D_s^- p$ decay,” JHEP **07** (2023), 075 doi:10.1007/JHEP07(2023)075 [arXiv:2212.12574 [hep-ex]].
- [176] R. Aaij *et al.* [LHCb], “Open charm production and asymmetry in pNe collisions at $\sqrt{s_{NN}} = 68.5$ GeV,” Eur. Phys. J. C **83** (2023) no.6, 541 doi:10.1140/epjc/s10052-023-11641-5 [arXiv:2211.11633 [hep-ex]].
- [177] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow D^{*+} D^{*-}$ decay,” JHEP **07** (2023), 119 doi:10.1007/JHEP07(2023)119 [arXiv:2210.14945 [hep-ex]].
- [178] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions $\mathcal{B}(B_c^+ \rightarrow B_s^0 \pi^+) / \mathcal{B}(B_c^+ \rightarrow J/\psi \pi^+)$,” JHEP **07** (2023), 066 doi:10.1007/JHEP07(2023)066 [arXiv:2210.12000 [hep-ex]].
- [179] R. Aaij *et al.* [LHCb], “Measurement of the Λ_c^+ to D^0 production ratio in peripheral PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV,” JHEP **06** (2023), 132 doi:10.1007/JHEP06(2023)132 [arXiv:2210.06939 [hep-ex]].
- [180] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour violating decays $B^0 \rightarrow K^{*0} \tau^\pm \mu^\mp$,” JHEP **06** (2023), 143 doi:10.1007/JHEP06(2023)143 [arXiv:2209.09846 [hep-ex]].
- [181] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ with $B^\pm \rightarrow D[K^\mp \pi^\pm \pi^\pm \pi^\mp] h^\pm$ decays using a binned phase-space approach,” JHEP **07** (2023), 138 doi:10.1007/JHEP07(2023)138 [arXiv:2209.03692 [hep-ex]].
- [182] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $D^+ \rightarrow \pi^- \pi^+ \pi^+$ decay and measurement of the $\pi^- \pi^+$ S-wave amplitude,” JHEP **06** (2023), 044 doi:10.1007/JHEP06(2023)044 [arXiv:2208.03300 [hep-ex]].
- [183] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour violating decays $B^0 \beta K^{*0} \mu e$ and $B_s^0 \rightarrow \phi \mu e$,” JHEP **06** (2023), 073 doi:10.1007/JHEP06(2023)073 [arXiv:2207.04005 [hep-ex]].
- [184] R. Aaij *et al.* [LHCb], “Measurement of τ_L using the $B_s^0 \rightarrow J/\psi \eta$ decay mode,” Eur. Phys. J. C **83** (2023) no.7, 629 doi:10.1140/epjc/s10052-023-11634-4 [arXiv:2206.03088 [hep-ex]].
- [185] V. Chobanova, M. Wingate, Y. Yusa, J. P. Dalseno, K. De Bruyn, U. Egede, F. Ferrari, T. Humair, A. Lupato and E. Malami, *et al.* “Summary of Working Group 4: Mixing and mixing-related CP violation in the B system: Δm , $\Delta \Gamma$, ϕ_s , ϕ_1/β , $\phi_2/\alpha, \phi_3/\gamma$,” PoS **CKM2021** (2023), 017 doi:10.22323/1.411.0017 [arXiv:2205.15662 [hep-ph]].
- [186] A. Lupato, M. Fiorini, E. Luppi, L. Minzoni, I. Slazyk, L. Tomassetti, M. Bartolini, R. Cardinale, F. Fontanelli and A. Petrolini, *et al.* “Performance of the LHCb RICH detectors during LHC Run 2,” JINST **17** (2022) no.07, P07013 doi:10.1088/1748-0221/17/07/P07013 [arXiv:2205.13400 [physics.ins-det]].
- [187] R. Aaij *et al.* [LHCb], “Measurement of the Z boson production cross-section in proton-lead collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” JHEP **06** (2023), 022 doi:10.1007/JHEP06(2023)022 [arXiv:2205.10213 [hep-ex]].
- [188] R. Aaij *et al.* [LHCb], “Measurement of antiproton production from antihyperon decays in p He collisions at $\sqrt{s_{NN}} = 110$ GeV,” Eur. Phys. J. C **83** (2023) no.6, 543 doi:10.1140/epjc/s10052-023-11673-x [arXiv:2205.09009 [hep-ex]].
- [189] R. Aaij *et al.* [LHCb], “Measurement of the prompt D^0 nuclear modification factor in p Pb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” [arXiv:2205.03936 [nucl-ex]].

- [190] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries in $D_{(s)}^+ \rightarrow \eta\pi^+$ and $D_{(s)}^+ \rightarrow \eta'\pi^+$ decays,” JHEP **04** (2023), 081 doi:10.1007/JHEP04(2023)081 [arXiv:2204.12228 [hep-ex]].
- [191] R. Aaij *et al.* [LHCb], “First Measurement of the $Z \rightarrow \mu^+\mu^-$ Angular Coefficients in the Forward Region of pp Collisions at $s=13$ TeV,” Phys. Rev. Lett. **129** (2022) no.9, 091801 doi:10.1103/PhysRevLett.129.091801 [arXiv:2203.01602 [hep-ex]].
- [192] R. Aaij *et al.* [LHCb], “Measurement of the charm mixing parameter $y_{CP} - y_{CP}^{K\pi}$ using two-body D^0 meson decays,” Phys. Rev. D **105** (2022) no.9, 092013 doi:10.1103/PhysRevD.105.092013 [arXiv:2202.09106 [hep-ex]].
- [193] R. Aaij *et al.* [LHCb], “Observation of the doubly charmed baryon decay $\Xi_{cc}^{++} \rightarrow \Xi_c^+\pi^+$,” JHEP **05** (2022), 038 doi:10.1007/JHEP05(2022)038 [arXiv:2202.05648 [hep-ex]].
- [194] R. Aaij *et al.* [LHCb], “Search for the decay $B^0 \rightarrow \phi\mu^+\mu^-$,” doi:10.1007/JHEP05(2022)067 [arXiv:2201.10167 [hep-ex]].
- [195] R. Aaij *et al.* [LHCb], “Observation of the decay $\Lambda_b^0 \rightarrow \Lambda_c^+\tau^-\bar{\nu}_\tau$,” Phys. Rev. Lett. **128** (2022) no.19, 191803 doi:10.1103/PhysRevLett.128.191803 [arXiv:2201.03497 [hep-ex]].
- [196] A. Lupato [LHCb], “CKM parameter measurement with semileptonic B_s decay at LHCb,” PoS **EPS-HEP2021** (2022), 539 doi:10.22323/1.398.0539
- [197] R. Aaij *et al.* [LHCb], “Observation of the $B^0 \rightarrow \bar{D}^{*0}K^+\pi^-$ and $B_s^0 \rightarrow \bar{D}^{*0}K^-\pi^+$ decays,” Phys. Rev. D **105** (2022) no.7, 072005 doi:10.1103/PhysRevD.105.072005 [arXiv:2112.11428 [hep-ex]].
- [198] R. Aaij *et al.* [LHCb], “Constraints on the CKM angle γ from $B^\pm \rightarrow Dh^\pm$ decays using $D \rightarrow h^\pm h'^\mp \pi^0$ final states,” JHEP **07** (2022), 099 doi:10.1007/JHEP07(2022)099 [arXiv:2112.10617 [hep-ex]].
- [199] R. Aaij *et al.* [LHCb], “Identification of charm jets at LHCb,” JINST **17** (2022) no.02, P02028 doi:10.1088/1748-0221/17/02/P02028 [arXiv:2112.08435 [hep-ex]].
- [200] R. Aaij *et al.* [LHCb], “Precision measurement of forward Z boson production in proton-proton collisions at $\sqrt{s} = 13$ TeV,” JHEP **07** (2022), 026 doi:10.1007/JHEP07(2022)026 [arXiv:2112.07458 [hep-ex]].
- [201] R. Aaij *et al.* [LHCb], “Observation of $\Lambda_b^0 \rightarrow D^+p\pi^-\pi^-$ and $\Lambda_b^0 \rightarrow D^{*+}p\pi^-\pi^-$ decays,” JHEP **03** (2022), 153 doi:10.1007/JHEP03(2022)153 [arXiv:2112.02013 [hep-ex]].
- [202] R. Aaij *et al.* [LHCb], “Searches for rare B_s^0 and B^0 decays into four muons,” JHEP **03** (2022), 109 doi:10.1007/JHEP03(2022)109 [arXiv:2111.11339 [hep-ex]].
- [203] R. Aaij *et al.* [LHCb], “Measurement of the photon polarization in $\Lambda_b^0 \rightarrow \Lambda \gamma$ decays,” Phys. Rev. D **105** (2022) no.5, L051104 doi:10.1103/PhysRevD.105.L051104 [arXiv:2111.10194 [hep-ex]].
- [204] R. Aaij *et al.* [LHCb], “Angular Analysis of $D^0 \rightarrow \pi^+\pi^-\mu^+\mu^-$ and $D^0 \rightarrow K^+K^-\mu^+\mu^-$ Decays and Search for CP Violation,” Phys. Rev. Lett. **128** (2022) no.22, 221801 doi:10.1103/PhysRevLett.128.221801 [arXiv:2111.03327 [hep-ex]].
- [205] R. Aaij *et al.* [LHCb], “Study of B_c^+ decays to charmonia and three light hadrons,” JHEP **01** (2022), 065 doi:10.1007/JHEP01(2022)065 [arXiv:2111.03001 [hep-ex]].
- [206] R. Aaij *et al.* [LHCb], “Centrality determination in heavy-ion collisions with the LHCb detector,” JINST **17** (2022) no.05, P05009 doi:10.1088/1748-0221/17/05/P05009 [arXiv:2111.01607 [nucl-ex]].
- [207] R. Aaij *et al.* [LHCb], “Tests of lepton universality using $B^0 \rightarrow K_S^0\ell^+\ell^-$ and $B^+ \rightarrow K^{*+}\ell^+\ell^-$ decays,” Phys. Rev. Lett. **128** (2022) no.19, 191802 doi:10.1103/PhysRevLett.128.191802 [arXiv:2110.09501 [hep-ex]].

- [208] R. Aaij *et al.* [LHCb], “Search for massive long-lived particles decaying semileptonically at $\sqrt{s} = 13$ TeV,” *Eur. Phys. J. C* **82** (2022) no.4, 373 doi:10.1140/epjc/s10052-022-10186-3 [arXiv:2110.07293 [hep-ex]].
- [209] R. Aaij *et al.* [LHCb], “Observation of Two New Excited Ξ_b^0 States Decaying to $\Lambda_b^0 K^- \pi^+$,” *Phys. Rev. Lett.* **128** (2022) no.16, 162001 doi:10.1103/PhysRevLett.128.162001 [arXiv:2110.04497 [hep-ex]].
- [210] R. Aaij *et al.* [LHCb], “Simultaneous determination of CKM angle γ and charm mixing parameters,” *JHEP* **12** (2021), 141 doi:10.1007/JHEP12(2021)141 [arXiv:2110.02350 [hep-ex]].
- [211] R. Aaij *et al.* [LHCb], “Study of Z Bosons Produced in Association with Charm in the Forward Region,” *Phys. Rev. Lett.* **128** (2022) no.8, 082001 doi:10.1103/PhysRevLett.128.082001 [arXiv:2109.08084 [hep-ex]].
- [212] R. Aaij *et al.* [LHCb], “Measurement of $\chi_{c1}(3872)$ production in proton-proton collisions at $\sqrt{s} = 8$ and 13 TeV,” *JHEP* **01** (2022), 131 doi:10.1007/JHEP01(2022)131 [arXiv:2109.07360 [hep-ex]].
- [213] R. Aaij *et al.* [LHCb], “Search for the doubly charmed baryon Ξ_{cc}^+ in the $\Xi_c^+ \pi^- \pi^+$ final state,” *JHEP* **12** (2021), 107 doi:10.1007/JHEP12(2021)107 [arXiv:2109.07292 [hep-ex]].
- [214] R. Aaij *et al.* [LHCb], “Observation of the suppressed $\Lambda_b^0 \rightarrow DpK^-$ decay with $D \rightarrow K^+ \pi^-$ and measurement of its CP asymmetry,” *Phys. Rev. D* **104** (2021) no.11, 112008 doi:10.1103/PhysRevD.104.112008 [arXiv:2109.02621 [hep-ex]].
- [215] L. Collaboration *et al.* [LHCb], “Measurement of the lifetimes of promptly produced Ω_c0 and Ξ_c0 baryons,” *Sci. Bull.* **67** (2022) no.5, 479-487 doi:10.1016/j.scib.2021.11.022 [arXiv:2109.01334 [hep-ex]].
- [216] R. Aaij *et al.* [LHCb], “Measurement of the W boson mass,” *JHEP* **01** (2022), 036 doi:10.1007/JHEP01(2022)036 [arXiv:2109.01113 [hep-ex]].
- [217] R. Aaij *et al.* [LHCb], “Measurement of J/ψ production cross-sections in pp collisions at $\sqrt{s} = 5$ TeV,” *JHEP* **11** (2021), 181 doi:10.1007/JHEP11(2021)181 [arXiv:2109.00220 [hep-ex]].
- [218] R. Aaij *et al.* [LHCb], “Updated search for B_c^+ decays to two charm mesons,” *JHEP* **12** (2021), 117 doi:10.1007/JHEP12(2021)117 [arXiv:2109.00488 [hep-ex]].
- [219] R. Aaij *et al.* [LHCb], “Measurement of the nuclear modification factor and prompt charged particle production in pPb and pp collisions at $\sqrt{s_{NN}} = 5$ TeV,” [arXiv:2108.13115 [hep-ex]].
- [220] R. Aaij *et al.* [LHCb], “Analysis of Neutral B-Meson Decays into Two Muons,” *Phys. Rev. Lett.* **128** (2022) no.4, 041801 doi:10.1103/PhysRevLett.128.041801 [arXiv:2108.09284 [hep-ex]].
- [221] R. Aaij *et al.* [LHCb], “Measurement of the $B_s^0 \rightarrow \mu^+ \mu^-$ decay properties and search for the $B^0 \rightarrow \mu^+ \mu^-$ and $B_s^0 \rightarrow \mu^+ \mu^- \gamma$ decays,” *Phys. Rev. D* **105** (2022) no.1, 012010 doi:10.1103/PhysRevD.105.012010 [arXiv:2108.09283 [hep-ex]].
- [222] R. Aaij *et al.* [LHCb], “Search for the radiative $\Xi_b^- \rightarrow \Xi^- \gamma$ decay,” *JHEP* **01** (2022), 069 doi:10.1007/JHEP01(2022)069 [arXiv:2108.07678 [hep-ex]].
- [223] R. Aaij *et al.* [LHCb], “Evidence for a new structure in the $J/\psi p$ and $J/\psi \bar{p}$ systems in $B_s^0 \rightarrow J/\psi p \bar{p}$ decays,” *Phys. Rev. Lett.* **128** (2022) no.6, 062001 doi:10.1103/PhysRevLett.128.062001 [arXiv:2108.04720 [hep-ex]].
- [224] R. Aaij *et al.* [LHCb], “ J/ψ photoproduction in Pb-Pb peripheral collisions at $\sqrt{s_{NN}} = 5$ TeV,” *Phys. Rev. C* **105** (2022) no.3, L032201 doi:10.1103/PhysRevC.105.L032201 [arXiv:2108.02681 [hep-ex]].

- [225] R. Aaij *et al.* [LHCb], “Measurement of prompt charged-particle production in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **01** (2022), 166 doi:10.1007/JHEP01(2022)166 [arXiv:2107.10090 [hep-ex]].
- [226] R. Aaij *et al.* [LHCb], “Angular analysis of the rare decay $B_s^0 \rightarrow \phi \mu^+ \mu^-$,” JHEP **11** (2021), 043 doi:10.1007/JHEP11(2021)043 [arXiv:2107.13428 [hep-ex]].
- [227] R. Aaij *et al.* [LHCb], “Observation of a $\Lambda_b^0 - \bar{\Lambda}_b^0$ production asymmetry in proton-proton collisions at $\sqrt{s} = 7$ and 8 TeV,” JHEP **10** (2021), 060 doi:10.1007/JHEP10(2021)060 [arXiv:2107.09593 [hep-ex]].
- [228] R. Aaij *et al.* [LHCb], “Observation of the Mass Difference Between Neutral Charm-Meson Eigenstates,” Phys. Rev. Lett. **127** (2021) no.11, 111801 doi:10.1103/PhysRevLett.127.111801 [arXiv:2106.03744 [hep-ex]].
- [229] R. Aaij *et al.* [LHCb], “Branching Fraction Measurements of the Rare $B_s^0 \rightarrow \phi \mu^+ \mu^-$ and $B_s^0 \rightarrow f_2'(1525) \mu^+ \mu^-$ Decays,” Phys. Rev. Lett. **127** (2021) no.15, 151801 doi:10.1103/PhysRevLett.127.151801 [arXiv:2105.14007 [hep-ex]].
- [230] R. Aaij *et al.* [LHCb], “Search for time-dependent CP violation in $D^0 \rightarrow K^+ K^-$ and $D^0 \rightarrow \pi^+ \pi^-$ decays,” Phys. Rev. D **104** (2021) no.7, 072010 doi:10.1103/PhysRevD.104.072010 [arXiv:2105.09889 [hep-ex]].
- [231] R. Aaij *et al.* [LHCb], “Search for the doubly charmed baryon Ω_{cc}^+ ,” Sci. China Phys. Mech. Astron. **64** (2021) no.10, 101062 doi:10.1007/s11433-021-1742-7 [arXiv:2105.06841 [hep-ex]].
- [232] R. Aaij *et al.* [LHCb], “Angular analysis of $B^0 \rightarrow D^{*-} D_s^{*+}$ with $D_s^{*+} \rightarrow D_s^+ \gamma$ decays,” JHEP **06** (2021), 177 doi:10.1007/JHEP06(2021)177 [arXiv:2105.02596 [hep-ex]].
- [233] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $D^0 \rightarrow K_S^0 K_S^0$ decays,” Phys. Rev. D **104** (2021) no.3, L031102 doi:10.1103/PhysRevD.104.L031102 [arXiv:2105.01565 [hep-ex]].
- [234] R. Aaij *et al.* [LHCb], “Search for CP violation in $\Xi_b^- \rightarrow p K^- K^-$ decays,” Phys. Rev. D **104** (2021) no.5, 052010 doi:10.1103/PhysRevD.104.052010 [arXiv:2104.15074 [hep-ex]].
- [235] R. Aaij *et al.* [LHCb], “Search for the doubly heavy baryons Ω_{bc}^0 and Ξ_{bc}^0 decaying to $\Lambda_c^+ \pi^-$ and $\Xi_c^+ \pi^-$,” Chin. Phys. C **45** (2021) no.9, 093002 doi:10.1088/1674-1137/ac0c70 [arXiv:2104.04759 [hep-ex]].
- [236] R. Aaij *et al.* [LHCb], “Search for CP violation in $D_{(s)}^+ \rightarrow h^+ \pi^0$ and $D_{(s)}^+ \rightarrow h^+ \eta$ decays,” JHEP **06** (2021), 019 doi:10.1007/JHEP06(2021)019 [arXiv:2103.11058 [hep-ex]].
- [237] R. Aaij, C. A. Beteta, T. Ackernley, B. Adeva, M. Adinolfi, H. Afsharnia, C. A. Aidala, S. Aiola, Z. Ajaltouni and S. Akar, *et al.* “Measurement of prompt-production cross-section ratio $\sigma(\chi_{c2})/\sigma(\chi_{c1})$ in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” Phys. Rev. C **103** (2021), 064905 doi:10.1103/PhysRevC.103.064905 [arXiv:2103.07349 [hep-ex]].
- [238] R. Aaij *et al.* [LHCb], “Precise measurement of the f_s/f_d ratio of fragmentation fractions and of B_s^0 decay branching fractions,” Phys. Rev. D **104** (2021) no.3, 032005 doi:10.1103/PhysRevD.104.032005 [arXiv:2103.06810 [hep-ex]].
- [239] R. Aaij *et al.* [LHCb], “Observation of the decay $\Lambda_b^0 \rightarrow \chi_{c1} p \pi^-$,” JHEP **05** (2021), 095 doi:10.1007/JHEP05(2021)095 [arXiv:2103.04949 [hep-ex]].
- [240] R. Aaij *et al.* [LHCb], “Observation of New Resonances Decaying to $J/\psi K^{++}$ and $J/\psi \phi$,” Phys. Rev. Lett. **127** (2021) no.8, 082001 doi:10.1103/PhysRevLett.127.082001 [arXiv:2103.01803 [hep-ex]].
- [241] R. Aaij *et al.* [LHCb], “Angular Analysis of the $B^+ \rightarrow K^{*+} \mu^+ \mu^-$ Decay,” Phys. Rev. Lett. **126**, no.16, 161802 (2021) doi:10.1103/PhysRevLett.126.161802 [arXiv:2012.13241 [hep-ex]].

- [242] R. Aaij *et al.* [LHCb], “Measurement of CP Violation in the Decay $B^+ \rightarrow K^+\pi^0$,” Phys. Rev. Lett. **126**, no.9, 091802 (2021) doi:10.1103/PhysRevLett.126.091802 [arXiv:2012.12789 [hep-ex]].
- [243] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow D^{*\pm}D^\mp$ decay,” JHEP **03**, 099 (2021) doi:10.1007/JHEP03(2021)099 [arXiv:2012.11341 [hep-ex]].
- [244] R. Aaij *et al.* [LHCb], “Evidence of a $J/\psi\Lambda$ structure and observation of excited Ξ^- states in the $\Xi_b^- \rightarrow J/\psi\Lambda K^-$ decay,” Sci. Bull. **66**, 1278-1287 (2021) doi:10.1016/j.scib.2021.02.030 [arXiv:2012.10380 [hep-ex]].
- [245] R. Aaij *et al.* [LHCb], “Measurement of CP observables in $B^\pm \rightarrow D^{(*)}K^\pm$ and $B^\pm \rightarrow D^{(*)}\pi^\pm$ decays using two-body D final states,” JHEP **04**, 081 (2021) doi:10.1007/JHEP04(2021)081 [arXiv:2012.09903 [hep-ex]].
- [246] R. Aaij *et al.* [LHCb], “Observation of CP violation in two-body $B_{(s)}^0$ -meson decays to charged pions and kaons,” JHEP **03**, 075 (2021) doi:10.1007/JHEP03(2021)075 [arXiv:2012.05319 [hep-ex]].
- [247] R. Aaij *et al.* [LHCb], “First observation of the decay $B_s^0 \rightarrow K^-\mu^+\nu_\mu$ and Measurement of $|V_{ub}|/|V_{cb}|$,” Phys. Rev. Lett. **126**, no.8, 081804 (2021) doi:10.1103/PhysRevLett.126.081804 [arXiv:2012.05143 [hep-ex]].
- [248] R. Aaij *et al.* [LHCb], “Search for long-lived particles decaying to $e^\pm\mu^\mp\nu$,” Eur. Phys. J. C **81**, no.3, 261 (2021) doi:10.1140/epjc/s10052-021-08994-0 [arXiv:2012.02696 [hep-ex]].
- [249] R. Aaij *et al.* [LHCb], “Observation of the $\Lambda_b^0 \rightarrow \Lambda_c^+K^+K^-\pi^-$ decay,” Phys. Lett. B **815**, 136172 (2021) doi:10.1016/j.physletb.2021.136172 [arXiv:2011.13738 [hep-ex]].
- [250] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ and B_s^0 - \bar{B}_s^0 mixing frequency with $B_s^0 \rightarrow D_s^\mp h^\pm \pi^\pm \pi^\mp$ decays,” JHEP **03**, 137 (2021) doi:10.1007/JHEP03(2021)137 [arXiv:2011.12041 [hep-ex]].
- [251] R. Aaij *et al.* [LHCb], “Observation of a New Excited D_s^+ Meson in $B^0 \rightarrow D^- D^+ K^+ \pi^-$ Decays,” Phys. Rev. Lett. **126**, no.12, 122002 (2021) doi:10.1103/PhysRevLett.126.122002 [arXiv:2011.09112 [hep-ex]].
- [252] R. Aaij *et al.* [LHCb], “Search for the rare decay $B^0 \rightarrow J/\psi\phi$,” Chin. Phys. C **45**, no.4, 043001 (2021) doi:10.1088/1674-1137/abdf40 [arXiv:2011.06847 [hep-ex]].
- [253] R. Aaij *et al.* [LHCb], “Search for heavy neutral leptons in $W^+ \rightarrow \mu^+ \mu^\pm \text{jet}$ decays,” Eur. Phys. J. C **81**, no.3, 248 (2021) doi:10.1140/epjc/s10052-021-08973-5 [arXiv:2011.05263 [hep-ex]].
- [254] R. Aaij *et al.* [LHCb], “Study of $B_s^0 \rightarrow J\psi\pi^+\pi^-K^+K^-$ decays,” JHEP **02**, 024 (2021) [erratum: JHEP **04**, 170 (2021)] doi:10.1007/JHEP02(2021)024 [arXiv:2011.01867 [hep-ex]].
- [255] R. Aaij *et al.* [LHCb], “Searches for 25 rare and forbidden decays of D^+ and D_s^+ mesons,” JHEP **06**, 044 (2021) doi:10.1007/JHEP06(2021)044 [arXiv:2011.00217 [hep-ex]].
- [256] R. Aaij *et al.* [LHCb], “Observation of a new Ξ_b^0 state,” Phys. Rev. D **103** (2021) no.1, 012004 doi:10.1103/PhysRevD.103.012004 [arXiv:2010.14485 [hep-ex]].
- [257] R. Aaij *et al.* [LHCb], “Measurement of the relative branching fractions of $B^+ \rightarrow h^+h'^+h'^-$ decays,” Phys. Rev. D **102** (2020), 112010 doi:10.1103/PhysRevD.102.112010 [arXiv:2010.11802 [hep-ex]].
- [258] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction of the $B^0 \rightarrow D_s^+ \pi^-$ decay,” Eur. Phys. J. C **81** (2021) no.4, 314 doi:10.1140/epjc/s10052-020-08790-2 [arXiv:2010.11986 [hep-ex]].
- [259] R. Aaij *et al.* [LHCb], “Measurement of differential $b\bar{b}$ - and $c\bar{c}$ -dijet cross-sections in the forward region of pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **02** (2021), 023 doi:10.1007/JHEP02(2021)023 [arXiv:2010.09437 [hep-ex]].

- [260] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ in $B^\pm \rightarrow DK^\pm$ and $B^\pm \rightarrow D\pi^\pm$ decays with $D \rightarrow K_S^0 h^+ h^-$,” JHEP **02** (2021), 169 doi:10.1007/JHEP02(2021)169 [arXiv:2010.08483 [hep-ex]].
- [261] R. Aaij *et al.* [LHCb], “Strong constraints on the $b \rightarrow s\gamma$ photon polarisation from $B^0 \rightarrow K^{*0} e^+ e^-$ decays,” JHEP **12** (2020), 081 doi:10.1007/JHEP12(2020)081 [arXiv:2010.06011 [hep-ex]].
- [262] R. Aaij *et al.* [LHCb], “Observation of Multiplicity Dependent Prompt $\chi_{c1}(3872)$ and $\psi(2S)$ Production in pp Collisions,” Phys. Rev. Lett. **126** (2021) no.9, 092001 doi:10.1103/PhysRevLett.126.092001 [arXiv:2009.06619 [hep-ex]].
- [263] R. Aaij *et al.* [LHCb], “Search for the doubly heavy Ξ_{bc}^0 baryon via decays to $D^0 p K^-$,” JHEP **11** (2020), 095 doi:10.1007/JHEP11(2020)095 [arXiv:2009.02481 [hep-ex]].
- [264] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $B^+ \rightarrow D^+ D^- K^+$ decay,” Phys. Rev. D **102** (2020), 112003 doi:10.1103/PhysRevD.102.112003 [arXiv:2009.00026 [hep-ex]].
- [265] R. Aaij *et al.* [LHCb], “A model-independent study of resonant structure in $B^+ \rightarrow D^+ D^- K^+$ decays,” Phys. Rev. Lett. **125** (2020), 242001 doi:10.1103/PhysRevLett.125.242001 [arXiv:2009.00025 [hep-ex]].
- [266] R. Aaij *et al.* [LHCb], “First branching fraction measurement of the suppressed decay $\Xi_c^0 \rightarrow \pi^- \Lambda_c^+$,” Phys. Rev. D **102** (2020) no.7, 071101 doi:10.1103/PhysRevD.102.071101 [arXiv:2007.12096 [hep-ex]].
- [267] R. Aaij *et al.* [LHCb], “First observation of the decay $\Lambda_b^0 \rightarrow \eta_c(1S) p K^-$,” Phys. Rev. D **102** (2020) no.11, 112012 doi:10.1103/PhysRevD.102.112012 [arXiv:2007.11292 [hep-ex]].
- [268] R. Aaij *et al.* [LHCb], “Observation of Enhanced Double Parton Scattering in Proton-Lead Collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” Phys. Rev. Lett. **125** (2020) no.21, 212001 doi:10.1103/PhysRevLett.125.212001 [arXiv:2007.06945 [hep-ex]].
- [269] R. Aaij *et al.* [LHCb], “Searches for low-mass dimuon resonances,” JHEP **10** (2020), 156 doi:10.1007/JHEP10(2020)156 [arXiv:2007.03923 [hep-ex]].
- [270] R. Aaij *et al.* [LHCb], “First observation of the decay $B^0 \rightarrow D^0 \bar{D}^0 K^+ \pi^-$,” Phys. Rev. D **102** (2020) no.5, 051102 doi:10.1103/PhysRevD.102.051102 [arXiv:2007.04280 [hep-ex]].
- [271] R. Aaij *et al.* [LHCb], “Observation of structure in the J/ψ -pair mass spectrum,” Sci. Bull. **65** (2020) no.23, 1983-1993 doi:10.1016/j.scib.2020.08.032 [arXiv:2006.16957 [hep-ex]].
- [272] R. Aaij *et al.* [LHCb], “Search for CP violation in $\Xi_c^+ \rightarrow p K^- \pi^+$ decays using model-independent techniques,” Eur. Phys. J. C **80** (2020) no.10, 986 doi:10.1140/epjc/s10052-020-8365-0 [arXiv:2006.03145 [hep-ex]].
- [273] R. Aaij *et al.* [LHCb], “Study of the lineshape of the $\chi_{c1}(3872)$ state,” Phys. Rev. D **102** (2020) no.9, 092005 doi:10.1103/PhysRevD.102.092005 [arXiv:2005.13419 [hep-ex]].
- [274] R. Aaij *et al.* [LHCb], “Study of the $\psi_2(3823)$ and $\chi_{c1}(3872)$ states in $B^+ \rightarrow (J\psi \pi^+ \pi^-) K^+$ decays,” JHEP **08** (2020), 123 doi:10.1007/JHEP08(2020)123 [arXiv:2005.13422 [hep-ex]].
- [275] R. Aaij *et al.* [LHCb], “Measurement of branching fraction ratios for $B^+ \rightarrow D^{*+} D^- K^+$, $B^+ \rightarrow D^{*-} D^+ K^+$, and $B^0 \rightarrow D^{*-} D^0 K^+$ decays,” JHEP **12** (2020), 139 doi:10.1007/JHEP12(2020)139 [arXiv:2005.10264 [hep-ex]].
- [276] R. Aaij *et al.* [LHCb], “Measurement of the $\Lambda_b^0 \rightarrow J/\psi \Lambda$ angular distribution and the Λ_b^0 polarisation in pp collisions,” JHEP **06** (2020), 110 doi:10.1007/JHEP06(2020)110 [arXiv:2004.10563 [hep-ex]].

- [277] R. Aaij *et al.* [LHCb], “Precision measurement of the B_c^+ meson mass,” JHEP **07** (2020), 123 doi:10.1007/JHEP07(2020)123 [arXiv:2004.08163 [hep-ex]].
- [278] R. Aaij *et al.* [LHCb], “Observation of New Ξ_c^0 Baryons Decaying to $\Lambda_c^+ K^-$,” Phys. Rev. Lett. **124** (2020) no.22, 222001 doi:10.1103/PhysRevLett.124.222001 [arXiv:2003.13649 [hep-ex]].
- [279] R. Aaij *et al.* [LHCb], “Measurement of the shape of the $B_s^0 \rightarrow D_s^{*-} \mu^+ \nu_\mu$ differential decay rate,” JHEP **12** (2020), 144 doi:10.1007/JHEP12(2020)144 [arXiv:2003.08453 [hep-ex]].
- [280] R. Aaij *et al.* [LHCb], “Measurement of CP -Averaged Observables in the $B^0 \rightarrow K^{*0} \mu^+ \mu^-$ Decay,” Phys. Rev. Lett. **125** (2020) no.1, 011802 doi:10.1103/PhysRevLett.125.011802 [arXiv:2003.04831 [hep-ex]].
- [281] R. Aaij *et al.* [LHCb], “Search for the lepton flavour violating decay $B^+ \rightarrow K^+ \mu^- \tau^+$ using B_{s2}^{*0} decays,” JHEP **06** (2020), 129 doi:10.1007/JHEP06(2020)129 [arXiv:2003.04352 [hep-ex]].
- [282] R. Aaij *et al.* [LHCb], “Search for the Rare Decays $B_s^0 \rightarrow e^+ e^-$ and $B^0 \rightarrow e^+ e^-$,” Phys. Rev. Lett. **124** (2020) no.21, 211802 doi:10.1103/PhysRevLett.124.211802 [arXiv:2003.03999 [hep-ex]].
- [283] R. Aaij *et al.* [LHCb], “Measurement of CP observables in $B \rightarrow DK$ and $B \rightarrow D\pi$ with $D \rightarrow K_S^0 K^\pm \pi^\mp$ decays,” JHEP **06** (2020), 058 doi:10.1007/JHEP06(2020)058 [arXiv:2002.08858 [hep-ex]].
- [284] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction of the decay $B_s^0 \rightarrow K_S^0 K_S^0$,” Phys. Rev. D **102** (2020) no.1, 012011 doi:10.1103/PhysRevD.102.012011 [arXiv:2002.08229 [hep-ex]].
- [285] R. Aaij *et al.* [LHCb], “Observation of a new baryon state in the $\Lambda_b^0 \pi^+ \pi^-$ mass spectrum,” JHEP **06** (2020), 136 doi:10.1007/JHEP06(2020)136 [arXiv:2002.05112 [hep-ex]].
- [286] R. Aaij *et al.* [LHCb], “Constraints on the $K_S^0 \rightarrow \mu^+ \mu^-$ Branching Fraction,” Phys. Rev. Lett. **125** (2020) no.23, 231801 doi:10.1103/PhysRevLett.125.231801 [arXiv:2001.10354 [hep-ex]].
- [287] R. Aaij *et al.* [LHCb], “Measurement of $|V_{cb}|$ with $B_s^0 \rightarrow D_s^{(*)-} \mu^+ \nu_\mu$ decays,” Phys. Rev. D **101** (2020) no.7, 072004 doi:10.1103/PhysRevD.101.072004 [arXiv:2001.03225 [hep-ex]].
- [288] R. Aaij *et al.* [LHCb], “First observation of excited Ω_b^- states,” Phys. Rev. Lett. **124** (2020) no.8, 082002 doi:10.1103/PhysRevLett.124.082002 [arXiv:2001.00851 [hep-ex]].
- [289] R. Aaij *et al.* [LHCb], “Search for CP violation and observation of P violation in $\Lambda_b^0 \rightarrow p \pi^- \pi^+ \pi^-$ decays,” Phys. Rev. D **102** (2020) no.5, 051101 doi:10.1103/PhysRevD.102.051101 [arXiv:1912.10741 [hep-ex]].
- [290] R. Aaij *et al.* [LHCb], “Test of lepton universality with $\Lambda_b^0 \rightarrow p K^- \ell^+ \ell^-$ decays,” JHEP **05** (2020), 040 doi:10.1007/JHEP05(2020)040 [arXiv:1912.08139 [hep-ex]].
- [291] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow D^{*\pm} D^\mp$ decays,” JHEP **03** (2020), 147 doi:10.1007/JHEP03(2020)147 [arXiv:1912.03723 [hep-ex]].
- [292] R. Aaij *et al.* [LHCb], “Isospin amplitudes in $\Lambda_b^0 \rightarrow J/\psi \Lambda(\Sigma^0)$ and $\Xi_b^0 \rightarrow J/\psi \Xi^0(\Lambda)$ decays,” Phys. Rev. Lett. **124** (2020) no.11, 111802 doi:10.1103/PhysRevLett.124.111802 [arXiv:1912.02110 [hep-ex]].
- [293] R. Aaij *et al.* [LHCb], “Observation of the semileptonic decay $B^+ \rightarrow p \bar{p} \mu^+ \nu_\mu$,” JHEP **03** (2020), 146 doi:10.1007/JHEP03(2020)146 [arXiv:1911.08187 [hep-ex]].
- [294] R. Aaij *et al.* [LHCb], “Precision measurement of the Ξ_{cc}^{++} mass,” JHEP **02** (2020), 049 doi:10.1007/JHEP02(2020)049 [arXiv:1911.08594 [hep-ex]].
- [295] R. Aaij *et al.* [LHCb], “Determination of quantum numbers for several excited charmed mesons observed in $B^- \rightarrow D^{*+} \pi^- \pi^-$ decays,” Phys. Rev. D **101** (2020) no.3, 032005 doi:10.1103/PhysRevD.101.032005 [arXiv:1911.05957 [hep-ex]].

- [296] R. Aaij *et al.* [LHCb], “Measurement of the $\eta_c(1S)$ production cross-section in pp collisions at $\sqrt{s} = 13$ TeV,” *Eur. Phys. J. C* **80** (2020) no.3, 191 doi:10.1140/epjc/s10052-020-7733-0 [arXiv:1911.03326 [hep-ex]].
- [297] R. Aaij *et al.* [LHCb], “Updated measurement of decay-time-dependent CP asymmetries in $D^0 \rightarrow K^+K^-$ and $D^0 \rightarrow \pi^+\pi^-$ decays,” *Phys. Rev. D* **101** (2020) no.1, 012005 doi:10.1103/PhysRevD.101.012005 [arXiv:1911.01114 [hep-ex]].
- [298] A. Lupato [LHCb], “Recent results from LHCb on charged-current decays of b-hadrons,” *PoS EPS-HEP2019* (2020), 223 doi:10.22323/1.364.0223
- [299] R. Aaij *et al.* [LHCb], “Measurement of the B_c^- meson production fraction and asymmetry in 7 and 13 TeV pp collisions,” *Phys. Rev. D* **100** (2019) no.11, 112006 doi:10.1103/PhysRevD.100.112006 [arXiv:1910.13404 [hep-ex]].
- [300] R. Aaij *et al.* [LHCb], “Measurement of Ξ_{cc}^{++} production in pp collisions at $\sqrt{s} = 13$ TeV,” *Chin. Phys. C* **44** (2020) no.2, 022001 doi:10.1088/1674-1137/44/2/022001 [arXiv:1910.11316 [hep-ex]].
- [301] R. Aaij *et al.* [LHCb], “Measurement of f_s/f_u Variation with Proton-Proton Collision Energy and B -Meson Kinematics,” *Phys. Rev. Lett.* **124** (2020) no.12, 122002 doi:10.1103/PhysRevLett.124.122002 [arXiv:1910.09934 [hep-ex]].
- [302] R. Aaij *et al.* [LHCb], “Search for $A' \rightarrow \mu^+\mu^-$ Decays,” *Phys. Rev. Lett.* **124** (2020) no.4, 041801 doi:10.1103/PhysRevLett.124.041801 [arXiv:1910.06926 [hep-ex]].
- [303] R. Aaij *et al.* [LHCb], “Search for the doubly charmed baryon Ξ_{cc}^+ ,” *Sci. China Phys. Mech. Astron.* **63** (2020) no.2, 221062 doi:10.1007/s11433-019-1471-8 [arXiv:1909.12273 [hep-ex]].
- [304] R. Aaij *et al.* [LHCb], “Observation of Several Sources of CP Violation in $B^+ \rightarrow \pi^+\pi^+\pi^-$ Decays,” *Phys. Rev. Lett.* **124** (2020) no.3, 031801 doi:10.1103/PhysRevLett.124.031801 [arXiv:1909.05211 [hep-ex]].
- [305] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $B^+ \rightarrow \pi^+\pi^+\pi^-$ decay,” *Phys. Rev. D* **101** (2020) no.1, 012006 doi:10.1103/PhysRevD.101.012006 [arXiv:1909.05212 [hep-ex]].
- [306] R. Aaij *et al.* [LHCb], “Measurement of the electron reconstruction efficiency at LHCb,” *JINST* **14** (2019), P11023 doi:10.1088/1748-0221/14/11/P11023 [arXiv:1909.02957 [hep-ex]].
- [307] R. Aaij *et al.* [LHCb], “Search for Lepton-Flavor Violating Decays $B^+ \rightarrow K^+\mu^\pm e^\mp$,” *Phys. Rev. Lett.* **123** (2019) no.24, 241802 doi:10.1103/PhysRevLett.123.241802 [arXiv:1909.01010 [hep-ex]].
- [308] R. Aaij *et al.* [LHCb], “Measurement of $\psi(2S)$ production cross-sections in proton-proton collisions at $\sqrt{s} = 7$ and 13 TeV,” *Eur. Phys. J. C* **80** (2020) no.3, 185 doi:10.1140/epjc/s10052-020-7638-y [arXiv:1908.03099 [hep-ex]].
- [309] R. Aaij *et al.* [LHCb], “Observation of New Resonances in the $\Lambda_b^0\pi^+\pi^-$ System,” *Phys. Rev. Lett.* **123** (2019) no.15, 152001 doi:10.1103/PhysRevLett.123.152001 [arXiv:1907.13598 [hep-ex]].
- [310] R. Aaij *et al.* [LHCb], “Measurement of CP violation in the $B_s^0 \rightarrow \phi\phi$ decay and search for the $B^0 \rightarrow \phi\phi$ decay,” *JHEP* **12** (2019), 155 doi:10.1007/JHEP12(2019)155 [arXiv:1907.10003 [hep-ex]].
- [311] R. Aaij *et al.* [LHCb], “Observation of the $\Lambda_b^0 \rightarrow \chi_{c1}(3872)pK^-$ decay,” *JHEP* **09** (2019), 028 doi:10.1007/JHEP09(2019)028 [arXiv:1907.00954 [hep-ex]].
- [312] R. Aaij *et al.* [LHCb], “Precision measurement of the Λ_c^+ , Ξ_c^+ and Ξ_c^0 baryon lifetimes,” *Phys. Rev. D* **100** (2019) no.3, 032001 doi:10.1103/PhysRevD.100.032001 [arXiv:1906.08350 [hep-ex]].
- [313] R. Aaij *et al.* [LHCb], “Updated measurement of time-dependent $\{CP\}$ -violating observables in $B_s^0 \rightarrow J/\psi K^+K^-$ decays,” *Eur. Phys. J. C* **79** (2019) no.8, 706 [erratum: *Eur. Phys. J. C* **80** (2020) no.7, 601] doi:10.1140/epjc/s10052-019-7159-8 [arXiv:1906.08356 [hep-ex]].

- [314] R. Aaij *et al.* [LHCb], “Measurement of CP observables in the process $B^0 \rightarrow DK^{*0}$ with two- and four-body D decays,” JHEP **08** (2019), 041 doi:10.1007/JHEP08(2019)041 [arXiv:1906.08297 [hep-ex]].
- [315] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B^\pm \rightarrow \pi^\pm K^+ K^-$ decays,” Phys. Rev. Lett. **123** (2019) no.23, 231802 doi:10.1103/PhysRevLett.123.231802 [arXiv:1905.09244 [hep-ex]].
- [316] R. Aaij *et al.* [LHCb], “Amplitude analysis of the $B_{(s)}^0 \rightarrow K^{*0} \bar{K}^{*0}$ decays and measurement of the branching fraction of the $B^0 \rightarrow K^{*0} \bar{K}^{*0}$ decay,” JHEP **07** (2019), 032 doi:10.1007/JHEP07(2019)032 [arXiv:1905.06662 [hep-ex]].
- [317] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour-violating decays $B_s^0 \rightarrow \tau^\pm \mu^\mp$ and $B^0 \rightarrow \tau^\pm \mu^\mp$,” Phys. Rev. Lett. **123** (2019) no.21, 211801 doi:10.1103/PhysRevLett.123.211801 [arXiv:1905.06614 [hep-ex]].
- [318] R. Aaij *et al.* [LHCb], “Measurement of CP-violating and mixing-induced observables in $B_s^0 \rightarrow \phi \gamma$ decays,” Phys. Rev. Lett. **123** (2019) no.8, 081802 doi:10.1103/PhysRevLett.123.081802 [arXiv:1905.06284 [hep-ex]].
- [319] R. Aaij *et al.* [LHCb], “A search for $\Xi_{cc}^{++} \rightarrow D^+ p K^- \pi^+$ decays,” JHEP **10** (2019), 124 doi:10.1007/JHEP10(2019)124 [arXiv:1905.02421 [hep-ex]].
- [320] R. Aaij *et al.* [LHCb], “Measurement of charged hadron production in Z-tagged jets in proton-proton collisions at $\sqrt{s} = 8$ TeV,” Phys. Rev. Lett. **123** (2019) no.23, 232001 doi:10.1103/PhysRevLett.123.232001 [arXiv:1904.08878 [hep-ex]].
- [321] R. Aaij *et al.* [LHCb], “First Observation of the Radiative Decay $\Lambda_b^0 \rightarrow \Lambda \gamma$,” Phys. Rev. Lett. **123** (2019) no.3, 031801 doi:10.1103/PhysRevLett.123.031801 [arXiv:1904.06697 [hep-ex]].
- [322] R. Aaij *et al.* [LHCb], “Observation of a narrow pentaquark state, $P_c(4312)^+$, and of two-peak structure of the $P_c(4450)^+$,” Phys. Rev. Lett. **122** (2019) no.22, 222001 doi:10.1103/PhysRevLett.122.222001 [arXiv:1904.03947 [hep-ex]].
- [323] R. Aaij *et al.* [LHCb], “Observation of an excited B_c^+ state,” Phys. Rev. Lett. **122** (2019) no.23, 232001 doi:10.1103/PhysRevLett.122.232001 [arXiv:1904.00081 [hep-ex]].
- [324] R. Aaij *et al.* [LHCb], “Near-threshold $D\bar{D}$ spectroscopy and observation of a new \bar{D} charmonium state,” JHEP **07** (2019), 035 doi:10.1007/JHEP07(2019)035 [arXiv:1903.12240 [hep-ex]].
- [325] R. Aaij *et al.* [LHCb], “Search for lepton-universality violation in $B^+ \rightarrow K^+ \ell^+ \ell^-$ decays,” Phys. Rev. Lett. **122** (2019) no.19, 191801 doi:10.1103/PhysRevLett.122.191801 [arXiv:1903.09252 [hep-ex]].
- [326] R. Aaij *et al.* [LHCb], “Observation of CP Violation in Charm Decays,” Phys. Rev. Lett. **122** (2019) no.21, 211803 doi:10.1103/PhysRevLett.122.211803 [arXiv:1903.08726 [hep-ex]].
- [327] R. Aaij *et al.* [LHCb], “Measurements of CP asymmetries in charmless four-body Λ_b^0 and Ξ_b^0 decays,” Eur. Phys. J. C **79** (2019) no.9, 745 doi:10.1140/epjc/s10052-019-7218-1 [arXiv:1903.06792 [hep-ex]].
- [328] R. Aaij *et al.* [LHCb], “Measurement of the CP-violating phase ϕ_s from $B_s^0 \rightarrow J/\psi \pi^+ \pi^-$ decays in 13 TeV pp collisions,” Phys. Lett. B **797** (2019), 134789 doi:10.1016/j.physletb.2019.07.036 [arXiv:1903.05530 [hep-ex]].
- [329] R. Aaij *et al.* [LHCb], “Measurement of the mass difference between neutral charm-meson eigenstates,” Phys. Rev. Lett. **122** (2019) no.23, 231802 doi:10.1103/PhysRevLett.122.231802 [arXiv:1903.03074 [hep-ex]].

- [330] R. Aaij *et al.* [LHCb], “Search for CP violation in $D_s^+ \rightarrow K_S^0\pi^+$, $D^+ \rightarrow K_S^0K^+$ and $D^+ \rightarrow \phi\pi^+$ decays,” Phys. Rev. Lett. **122** (2019) no.19, 191803 doi:10.1103/PhysRevLett.122.191803 [arXiv:1903.01150 [hep-ex]].
- [331] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B_s^0 \rightarrow K_S^0K^\pm\pi^\mp$ decays,” JHEP **06** (2019), 114 doi:10.1007/JHEP06(2019)114 [arXiv:1902.07955 [hep-ex]].
- [332] R. Aaij *et al.* [LHCb], “Measurement of b hadron fractions in 13 TeV pp collisions,” Phys. Rev. D **100** (2019) no.3, 031102 doi:10.1103/PhysRevD.100.031102 [arXiv:1902.06794 [hep-ex]].
- [333] R. Aaij *et al.* [LHCb], “Dalitz plot analysis of the $D^+ \rightarrow K^-K^+K^+$ decay,” JHEP **04** (2019), 063 doi:10.1007/JHEP04(2019)063 [arXiv:1902.05884 [hep-ex]].
- [334] R. Aaij *et al.* [LHCb], “Observation of $B_{(s)}^0 \rightarrow J/\psi p\bar{p}$ decays and precision measurements of the $B_{(s)}^0$ masses,” Phys. Rev. Lett. **122** (2019) no.19, 191804 doi:10.1103/PhysRevLett.122.191804 [arXiv:1902.05588 [hep-ex]].
- [335] R. Aaij *et al.* [LHCb], “Measurement of B^+ , B^0 and Λ_b^0 production in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” Phys. Rev. D **99** (2019) no.5, 052011 doi:10.1103/PhysRevD.99.052011 [arXiv:1902.05599 [hep-ex]].
- [336] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions of the decays $\Lambda_b^0 \rightarrow \psi(2S)\Lambda$ and $\Lambda_b^0 \rightarrow J/\psi\Lambda$,” JHEP **03** (2019), 126 doi:10.1007/JHEP03(2019)126 [arXiv:1902.02092 [hep-ex]].
- [337] R. Aaij *et al.* [LHCb], “Measurement of the mass and production rate of Ξ_b^- baryons,” Phys. Rev. D **99** (2019) no.5, 052006 doi:10.1103/PhysRevD.99.052006 [arXiv:1901.07075 [hep-ex]].
- [338] R. Aaij *et al.* [LHCb], “Observation of the doubly Cabibbo-suppressed decay $\Xi_c^+ \rightarrow p\phi$,” JHEP **04** (2019), 084 doi:10.1007/JHEP04(2019)084 [arXiv:1901.06222 [hep-ex]].
- [339] R. Aaij *et al.* [LHCb], “Model-Independent Observation of Exotic Contributions to $B^0 \rightarrow J/\psi K^+\pi^-$ Decays,” Phys. Rev. Lett. **122** (2019) no.15, 152002 doi:10.1103/PhysRevLett.122.152002 [arXiv:1901.05745 [hep-ex]].
- [340] R. Aaij *et al.* [LHCb], “Study of the $B^0 \rightarrow \rho(770)^0 K^*(892)^0$ decay with an amplitude analysis of $B^0 \rightarrow (\pi^+\pi^-)(K^+\pi^-)$ decays,” JHEP **05** (2019), 026 doi:10.1007/JHEP05(2019)026 [arXiv:1812.07008 [hep-ex]].
- [341] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction and CP asymmetry in $B^+ \rightarrow J/\psi\rho^+$ decays,” Eur. Phys. J. C **79** (2019) no.6, 537 doi:10.1140/epjc/s10052-019-6698-3 [arXiv:1812.07041 [hep-ex]].
- [342] R. Aaij *et al.* [LHCb], “Search for the rare decay $B^+ \rightarrow \mu^+\mu^-\mu^+\nu_\mu$,” Eur. Phys. J. C **79** (2019) no.8, 675 doi:10.1140/epjc/s10052-019-7112-x [arXiv:1812.06004 [hep-ex]].
- [343] R. Aaij *et al.* [LHCb], “Search for CP violation through an amplitude analysis of $D^0 \rightarrow K^+K^-\pi^+\pi^-$ decays,” JHEP **02** (2019), 126 doi:10.1007/JHEP02(2019)126 [arXiv:1811.08304 [hep-ex]].
- [344] R. Aaij *et al.* [LHCb], “First Measurement of Charm Production in its Fixed-Target Configuration at the LHC,” Phys. Rev. Lett. **122** (2019) no.13, 132002 doi:10.1103/PhysRevLett.122.132002 [arXiv:1810.07907 [hep-ex]].
- [345] R. Aaij *et al.* [LHCb], “Study of Υ production in pPb collisions at $\sqrt{s_{NN}} = 8.16$ TeV,” JHEP **11** (2018), 194 [erratum: JHEP **02** (2020), 093] doi:10.1007/JHEP11(2018)194 [arXiv:1810.07655 [hep-ex]].
- [346] R. Aaij *et al.* [LHCb], “Measurement of the Charm-Mixing Parameter y_{CP} ,” Phys. Rev. Lett. **122** (2019) no.1, 011802 doi:10.1103/PhysRevLett.122.011802 [arXiv:1810.06874 [hep-ex]].

- [347] R. Aaij *et al.* [LHCb], “Measurement of the branching fractions of the decays $D^+ \rightarrow K^- K^+ K^+$, $D^+ \rightarrow \pi^- \pi^+ K^+$ and $D_s^+ \rightarrow \pi^- K^+ K^+$,” JHEP **03** (2019), 176 doi:10.1007/JHEP03(2019)176 [arXiv:1810.03138 [hep-ex]].
- [348] R. Aaij *et al.* [LHCb], “Observation of Two Resonances in the $\Lambda_b^0 \pi^\pm$ Systems and Precise Measurement of Σ_b^\pm and $\Sigma_b^{*\pm}$ properties,” Phys. Rev. Lett. **122** (2019) no.1, 012001 doi:10.1103/PhysRevLett.122.012001 [arXiv:1809.07752 [hep-ex]].
- [349] R. Aaij *et al.* [LHCb], “Evidence for an $\eta_c(1S)\pi^-$ resonance in $B^0 \rightarrow \eta_c(1S)K^+\pi^-$ decays,” Eur. Phys. J. C **78** (2018) no.12, 1019 doi:10.1140/epjc/s10052-018-6447-z [arXiv:1809.07416 [hep-ex]].
- [350] R. Aaij *et al.* [LHCb], “Prompt Λ_c^+ production in p Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV,” JHEP **02** (2019), 102 doi:10.1007/JHEP02(2019)102 [arXiv:1809.01404 [hep-ex]].
- [351] R. Aaij *et al.* [LHCb], “Search for lepton-flavour-violating decays of Higgs-like bosons,” Eur. Phys. J. C **78** (2018) no.12, 1008 doi:10.1140/epjc/s10052-018-6386-8 [arXiv:1808.07135 [hep-ex]].
- [352] R. Aaij *et al.* [LHCb], “Measurement of Antiproton Production in pHe Collisions at $\sqrt{s_{NN}} = 110$ GeV,” Phys. Rev. Lett. **121** (2018) no.22, 222001 doi:10.1103/PhysRevLett.121.222001 [arXiv:1808.06127 [hep-ex]].
- [353] R. Aaij *et al.* [LHCb], “Angular moments of the decay $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$ at low hadronic recoil,” JHEP **09** (2018), 146 doi:10.1007/JHEP09(2018)146 [arXiv:1808.00264 [hep-ex]].
- [354] R. Aaij *et al.* [LHCb], “Measurement of the relative $B^- \rightarrow D^0/D^{*0}/D^{**0}\mu^-\bar{\nu}_\mu$ branching fractions using B^- mesons from \bar{B}_{s2}^{*0} decays,” Phys. Rev. D **99** (2019) no.9, 092009 doi:10.1103/PhysRevD.99.092009 [arXiv:1807.10722 [hep-ex]].
- [355] R. Aaij *et al.* [LHCb], “Search for CP violation in $\Lambda_b^0 \rightarrow pK^-$ and $\Lambda_b^0 \rightarrow p\pi^-$ decays,” Phys. Lett. B **787** (2018), 124-133 doi:10.1016/j.physletb.2018.10.039 [arXiv:1807.06544 [hep-ex]].
- [356] R. Aaij *et al.* [LHCb], “First Observation of the Doubly Charmed Baryon Decay $\Xi_{cc}^{++} \rightarrow \Xi_c^+ \pi^+$,” Phys. Rev. Lett. **121** (2018) no.16, 162002 doi:10.1103/PhysRevLett.121.162002 [arXiv:1807.01919 [hep-ex]].
- [357] R. Aaij *et al.* [LHCb], “Observation of $B_s^0 \rightarrow \bar{D}^{*0}\phi$ and search for $B^0 \rightarrow \bar{D}^0\phi$ decays,” Phys. Rev. D **98** (2018) no.7, 071103 doi:10.1103/PhysRevD.98.071103 [arXiv:1807.01892 [hep-ex]].
- [358] R. Aaij *et al.* [LHCb], “Measurement of the Ω_c^0 baryon lifetime,” Phys. Rev. Lett. **121** (2018) no.9, 092003 doi:10.1103/PhysRevLett.121.092003 [arXiv:1807.02024 [hep-ex]].
- [359] R. Aaij *et al.* [LHCb], “Observation of the decay $B_s^0 \rightarrow \bar{D}^0 K^+ K^-$,” Phys. Rev. D **98** (2018) no.7, 072006 doi:10.1103/PhysRevD.98.072006 [arXiv:1807.01891 [hep-ex]].
- [360] R. Aaij *et al.* [LHCb], “Measurement of Angular and CP Asymmetries in $D^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-$ and $D^0 \rightarrow K^+ K^- \mu^+ \mu^-$ decays,” Phys. Rev. Lett. **121** (2018) no.9, 091801 doi:10.1103/PhysRevLett.121.091801 [arXiv:1806.10793 [hep-ex]].
- [361] R. Aaij *et al.* [LHCb], “Observation of the decay $\bar{B}_s^0 \rightarrow \chi_{c2} K^+ K^-$ in the ϕ mass region,” JHEP **08** (2018), 191 doi:10.1007/JHEP08(2018)191 [arXiv:1806.10576 [hep-ex]].
- [362] R. Aaij *et al.* [LHCb], “Search for beautiful tetraquarks in the $\Upsilon(1S)\mu^+\mu^-$ invariant-mass spectrum,” JHEP **10** (2018), 086 doi:10.1007/JHEP10(2018)086 [arXiv:1806.09707 [hep-ex]].
- [363] R. Aaij *et al.* [LHCb], “Observation of the decay $\Lambda_b^0 \rightarrow \psi(2S)p\pi^-$,” JHEP **08** (2018), 131 doi:10.1007/JHEP08(2018)131 [arXiv:1806.08084 [hep-ex]].
- [364] R. Aaij *et al.* [LHCb], “Measurement of $Z \rightarrow \tau^+ \tau^-$ production in proton-proton collisions at $\sqrt{s} = 8$ TeV,” JHEP **09** (2018), 159 doi:10.1007/JHEP09(2018)159 [arXiv:1806.05008 [hep-ex]].

- [365] R. Aaij *et al.* [LHCb], “Central exclusive production of J/ψ and $\psi(2S)$ mesons in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **10** (2018), 167 doi:10.1007/JHEP10(2018)167 [arXiv:1806.04079 [hep-ex]].
- [366] R. Aaij *et al.* [LHCb], “Measurement of the Lifetime of the Doubly Charmed Baryon Ξ_{cc}^{++} ,” Phys. Rev. Lett. **121** (2018) no.5, 052002 doi:10.1103/PhysRevLett.121.052002 [arXiv:1806.02744 [hep-ex]].
- [367] R. Aaij *et al.* [LHCb], “Measurement of the time-integrated CP asymmetry in $D^0 \rightarrow K_S^0 K_S^0$ decays,” JHEP **11** (2018), 048 doi:10.1007/JHEP11(2018)048 [arXiv:1806.01642 [hep-ex]].
- [368] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ using $B^\pm \rightarrow DK^\pm$ with $D \rightarrow K_S^0 \pi^+ \pi^-$, $K_S^0 K^+ K^-$ decays,” JHEP **08** (2018), 176 [erratum: JHEP **10** (2018), 107] doi:10.1007/JHEP08(2018)176 [arXiv:1806.01202 [hep-ex]].
- [369] R. Aaij *et al.* [LHCb], “Search for a dimuon resonance in the Υ mass region,” JHEP **09** (2018), 147 doi:10.1007/JHEP09(2018)147 [arXiv:1805.09820 [hep-ex]].
- [370] R. Aaij *et al.* [LHCb], “Measurement of D_s^\pm production asymmetry in pp collisions at $\sqrt{s} = 7$ and 8 TeV,” JHEP **08** (2018), 008 doi:10.1007/JHEP08(2018)008 [arXiv:1805.09869 [hep-ex]].
- [371] R. Aaij *et al.* [LHCb], “Observation of a new Ξ_b^- resonance,” Phys. Rev. Lett. **121** (2018) no.7, 072002 doi:10.1103/PhysRevLett.121.072002 [arXiv:1805.09418 [hep-ex]].
- [372] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries in two-body $B_{(s)}^0$ -meson decays to charged pions and kaons,” Phys. Rev. D **98** (2018) no.3, 032004 doi:10.1103/PhysRevD.98.032004 [arXiv:1805.06759 [hep-ex]].
- [373] R. Aaij *et al.* [LHCb], “Search for CP violation using triple product asymmetries in $\Lambda_b^0 \rightarrow pK^- \pi^+ \pi^-$, $\Lambda_b^0 \rightarrow pK^- K^+ K^-$ and $\Xi_b^0 \rightarrow pK^- K^- \pi^+$ decays,” JHEP **08** (2018), 039 doi:10.1007/JHEP08(2018)039 [arXiv:1805.03941 [hep-ex]].
- [374] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow D^\mp \pi^\pm$ decays,” JHEP **06** (2018), 084 doi:10.1007/JHEP06(2018)084 [arXiv:1805.03448 [hep-ex]].
- [375] A. Lupato [LHCb], “Tests of Lepton Flavour Universality at LHCb,” Int. J. Mod. Phys. Conf. Ser. **46** (2018), 1860070 doi:10.1142/S2010194518600704
- [376] R. Aaij *et al.* [LHCb], “Observation of the decay $\Lambda_b^0 \rightarrow \Lambda_c^+ p \bar{p} \pi^-$,” Phys. Lett. B **784** (2018), 101-111 doi:10.1016/j.physletb.2018.07.033 [arXiv:1804.09617 [hep-ex]].
- [377] R. Aaij *et al.* [LHCb], “Measurement of Υ production in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **07** (2018), 134 [erratum: JHEP **05** (2019), 076] doi:10.1007/JHEP07(2018)134 [arXiv:1804.09214 [hep-ex]].
- [378] R. Aaij *et al.* [LHCb], “Evidence for the decay $B_S^0 \rightarrow \bar{K}^{*0} \mu^+ \mu^-$,” JHEP **07** (2018), 020 doi:10.1007/JHEP07(2018)020 [arXiv:1804.07167 [hep-ex]].
- [379] R. Aaij *et al.* [LHCb], “Measurement of the CP asymmetry in $B^- \rightarrow D_s^- D^0$ and $B^- \rightarrow D^- D^0$ decays,” JHEP **05** (2018), 160 doi:10.1007/JHEP05(2018)160 [arXiv:1803.10990 [hep-ex]].
- [380] R. Aaij *et al.* [LHCb], “Measurement of the inelastic pp cross-section at a centre-of-mass energy of 13 TeV,” JHEP **06** (2018), 100 doi:10.1007/JHEP06(2018)100 [arXiv:1803.10974 [hep-ex]].
- [381] R. Aaij *et al.* [LHCb], “Measurement of forward top pair production in the dilepton channel in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **08** (2018), 174 doi:10.1007/JHEP08(2018)174 [arXiv:1803.05188 [hep-ex]].
- [382] R. Aaij *et al.* [LHCb], “Amplitude analysis of the decay $\bar{B}^0 \rightarrow K_S^0 \pi^+ \pi^-$ and first observation of the CP asymmetry in $\bar{B}^0 \rightarrow K^*(892)^- \pi^+$,” Phys. Rev. Lett. **120** (2018) no.26, 261801 doi:10.1103/PhysRevLett.120.261801 [arXiv:1712.09320 [hep-ex]].

- [383] R. Aaij *et al.* [LHCb], “Evidence for the rare decay $\Sigma^+ \rightarrow p\mu^+\mu^-$,” Phys. Rev. Lett. **120** (2018) no.22, 221803 doi:10.1103/PhysRevLett.120.221803 [arXiv:1712.08606 [hep-ex]].
- [384] R. Aaij *et al.* [LHCb], “First measurement of the CP -violating phase $\phi_s^{d\bar{d}}$ in $B_s^0 \rightarrow (K^+\pi^-)(K^-\pi^+)$ decays,” JHEP **03** (2018), 140 doi:10.1007/JHEP03(2018)140 [arXiv:1712.08683 [hep-ex]].
- [385] R. Aaij *et al.* [LHCb], “Studies of the resonance structure in $D^0 \rightarrow K^\mp\pi^\pm\pi^\pm\pi^\mp$ decays,” Eur. Phys. J. C **78** (2018) no.6, 443 doi:10.1140/epjc/s10052-018-5758-4 [arXiv:1712.08609 [hep-ex]].
- [386] R. Aaij *et al.* [LHCb], “Search for the rare decay $\Lambda_c^+ \rightarrow p\mu^+\mu^-$,” Phys. Rev. D **97** (2018) no.9, 091101 doi:10.1103/PhysRevD.97.091101 [arXiv:1712.07938 [hep-ex]].
- [387] R. Aaij *et al.* [LHCb], “Search for weakly decaying b -flavored pentaquarks,” Phys. Rev. D **97** (2018) no.3, 032010 doi:10.1103/PhysRevD.97.032010 [arXiv:1712.08086 [hep-ex]].
- [388] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $B_s^0 \rightarrow D_s^\mp K^\pm$ decays,” JHEP **03** (2018), 059 doi:10.1007/JHEP03(2018)059 [arXiv:1712.07428 [hep-ex]].
- [389] R. Aaij *et al.* [LHCb], “A measurement of the CP asymmetry difference in $\Lambda_c^+ \rightarrow pK^-K^+$ and $p\pi^-\pi^+$ decays,” JHEP **03** (2018), 182 doi:10.1007/JHEP03(2018)182 [arXiv:1712.07051 [hep-ex]].
- [390] R. Aaij *et al.* [LHCb], “Search for B_c^+ decays to two charm mesons,” Nucl. Phys. B **930** (2018), 563-582 doi:10.1016/j.nuclphysb.2018.03.015 [arXiv:1712.04702 [hep-ex]].
- [391] R. Aaij *et al.* [LHCb], “Search for excited B_c^+ states,” JHEP **01** (2018), 138 doi:10.1007/JHEP01(2018)138 [arXiv:1712.04094 [hep-ex]].
- [392] R. Aaij *et al.* [LHCb], “Updated determination of D^0 - \bar{D}^0 mixing and CP violation parameters with $D^0 \rightarrow K^+\pi^-$ decays,” Phys. Rev. D **97** (2018) no.3, 031101 doi:10.1103/PhysRevD.97.031101 [arXiv:1712.03220 [hep-ex]].
- [393] R. Aaij *et al.* [LHCb], “Measurement of branching fractions of charmless four-body Λ_b^0 and Ξ_b^0 decays,” JHEP **02** (2018), 098 doi:10.1007/JHEP02(2018)098 [arXiv:1711.05490 [hep-ex]].
- [394] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions $\mathcal{B}(B_c^+ \rightarrow J/\psi\tau^+\nu_\tau)/\mathcal{B}(B_c^+ \rightarrow J/\psi\mu^+\nu_\mu)$,” Phys. Rev. Lett. **120** (2018) no.12, 121801 doi:10.1103/PhysRevLett.120.121801 [arXiv:1711.05623 [hep-ex]].
- [395] R. Aaij *et al.* [LHCb], “First observation of $B^+ \rightarrow D_s^+K^+K^-$ decays and a search for $B^+ \rightarrow D_s^+\phi$ decays,” JHEP **01** (2018), 131 doi:10.1007/JHEP01(2018)131 [arXiv:1711.05637 [hep-ex]].
- [396] R. Aaij *et al.* [LHCb], “Test of Lepton Flavor Universality by the measurement of the $B^0 \rightarrow D^{*-}\tau^+\nu_\tau$ branching fraction using three-prong τ decays,” Phys. Rev. D **97** (2018) no.7, 072013 doi:10.1103/PhysRevD.97.072013 [arXiv:1711.02505 [hep-ex]].
- [397] R. Aaij *et al.* [LHCb], “Measurements of the branching fractions of $\Lambda_c^+ \rightarrow p\pi^-\pi^+$, $\Lambda_c^+ \rightarrow pK^-K^+$, and $\Lambda_c^+ \rightarrow p\pi^-K^+$,” JHEP **03** (2018), 043 doi:10.1007/JHEP03(2018)043 [arXiv:1711.01157 [hep-ex]].
- [398] R. Aaij *et al.* [LHCb], “Measurement of the B^\pm production cross-section in pp collisions at $\sqrt{s} = 7$ and 13 TeV,” JHEP **12** (2017), 026 doi:10.1007/JHEP12(2017)026 [arXiv:1710.04921 [hep-ex]].
- [399] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour violating decays $B_{(s)}^0 \rightarrow e^\pm\mu^\mp$,” JHEP **03** (2018), 078 doi:10.1007/JHEP03(2018)078 [arXiv:1710.04111 [hep-ex]].
- [400] R. Aaij *et al.* [LHCb], “Search for Dark Photons Produced in 13 TeV pp Collisions,” Phys. Rev. Lett. **120** (2018) no.6, 061801 doi:10.1103/PhysRevLett.120.061801 [arXiv:1710.02867 [hep-ex]].

- [401] R. Aaij *et al.* [LHCb], “Measurement of CP observables in $B^\pm \rightarrow DK^{*\pm}$ decays using two- and four-body D final states,” JHEP **11** (2017), 156 [erratum: JHEP **05** (2018), 067] doi:10.1007/JHEP11(2017)156 [arXiv:1709.05855 [hep-ex]].
- [402] R. Aaij *et al.* [LHCb], “ χ_{c1} and χ_{c2} Resonance Parameters with the Decays $\chi_{c1,c2} \rightarrow J/\psi\mu^+\mu^-$,” Phys. Rev. Lett. **119** (2017) no.22, 221801 doi:10.1103/PhysRevLett.119.221801 [arXiv:1709.04247 [hep-ex]].
- [403] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow J/\psi K_S^0$ and $B^0 \rightarrow \psi(2S)K_S^0$ decays,” JHEP **11** (2017), 170 doi:10.1007/JHEP11(2017)170 [arXiv:1709.03944 [hep-ex]].
- [404] R. Aaij *et al.* [LHCb], “First observation of forward $Z \rightarrow b\bar{b}$ production in pp collisions at $\sqrt{s} = 8$ TeV,” Phys. Lett. B **776** (2018), 430-439 doi:10.1016/j.physletb.2017.11.066 [arXiv:1709.03458 [hep-ex]].
- [405] R. Aaij *et al.* [LHCb], “Measurement of the shape of the $\Lambda_b^0 \rightarrow \Lambda_c^+\mu^-\bar{\nu}_\mu$ differential decay rate,” Phys. Rev. D **96** (2017) no.11, 112005 doi:10.1103/PhysRevD.96.112005 [arXiv:1709.01920 [hep-ex]].
- [406] R. Aaij *et al.* [LHCb], “Bose-Einstein correlations of same-sign charged pions in the forward region in pp collisions at $\sqrt{s} = 7$ TeV,” JHEP **12** (2017), 025 doi:10.1007/JHEP12(2017)025 [arXiv:1709.01769 [hep-ex]].
- [407] R. Aaij *et al.* [LHCb], “Measurement of the Υ polarizations in pp collisions at $\sqrt{s} = 7$ and 8 TeV,” JHEP **12** (2017), 110 doi:10.1007/JHEP12(2017)110 [arXiv:1709.01301 [hep-ex]].
- [408] R. Aaij *et al.* [LHCb], “First Observation of the Rare Purely Baryonic Decay $B^0 \rightarrow p\bar{p}$,” Phys. Rev. Lett. **119** (2017) no.23, 232001 doi:10.1103/PhysRevLett.119.232001 [arXiv:1709.01156 [hep-ex]].
- [409] R. Aaij *et al.* [LHCb], “Measurement of the ratio of the $B^0 \rightarrow D^{*-}\tau^+\nu_\tau$ and $B^0 \rightarrow D^{*-}\mu^+\nu_\mu$ branching fractions using three-prong τ -lepton decays,” Phys. Rev. Lett. **120** (2018) no.17, 171802 doi:10.1103/PhysRevLett.120.171802 [arXiv:1708.08856 [hep-ex]].
- [410] R. Aaij *et al.* [LHCb], “Measurement of CP observables in $B^\pm \rightarrow D^{(*)}K^\pm$ and $B^\pm \rightarrow D^{(*)}\pi^\pm$ decays,” Phys. Lett. B **777** (2018), 16-30 doi:10.1016/j.physletb.2017.11.070 [arXiv:1708.06370 [hep-ex]].
- [411] R. Aaij *et al.* [LHCb], “Study of $b\bar{b}$ correlations in high energy proton-proton collisions,” JHEP **11** (2017), 030 doi:10.1007/JHEP11(2017)030 [arXiv:1708.05994 [hep-ex]].
- [412] R. Aaij *et al.* [LHCb], “Search for Baryon-Number Violating Ξ_b^0 Oscillations,” Phys. Rev. Lett. **119** (2017) no.18, 181807 doi:10.1103/PhysRevLett.119.181807 [arXiv:1708.05808 [hep-ex]].
- [413] R. Aaij *et al.* [LHCb], “Observation of D^0 meson decays to $\pi^+\pi^-\mu^+\mu^-$ and $K^+K^-\mu^+\mu^-$ final states,” Phys. Rev. Lett. **119** (2017) no.18, 181805 doi:10.1103/PhysRevLett.119.181805 [arXiv:1707.08377 [hep-ex]].
- [414] R. Aaij *et al.* [LHCb], “Study of prompt D^0 meson production in pPb collisions at $\sqrt{s_{NN}} = 5$ TeV,” JHEP **10** (2017), 090 doi:10.1007/JHEP10(2017)090 [arXiv:1707.02750 [hep-ex]].
- [415] R. Aaij *et al.* [LHCb], “Updated branching fraction measurements of $B_{(s)}^0 \rightarrow K_s^0 h^+ h'^-$ decays,” JHEP **11** (2017), 027 doi:10.1007/JHEP11(2017)027 [arXiv:1707.01665 [hep-ex]].
- [416] R. Aaij *et al.* [LHCb], “Observation of the doubly charmed baryon Ξ_{cc}^{++} ,” Phys. Rev. Lett. **119** (2017) no.11, 112001 doi:10.1103/PhysRevLett.119.112001 [arXiv:1707.01621 [hep-ex]].
- [417] R. Aaij *et al.* [LHCb], “Study of charmonium production in b -hadron decays and first evidence for the decay $B_s^0 \rightarrow \phi\phi\phi$,” Eur. Phys. J. C **77** (2017) no.9, 609 doi:10.1140/epjc/s10052-017-5151-8 [arXiv:1706.07013 [hep-ex]].

- [418] R. Aaij *et al.* [LHCb], “Prompt and nonprompt J/ψ production and nuclear modification in $p\text{Pb}$ collisions at $\sqrt{s_{\text{NN}}} = 8.16$ TeV,” *Phys. Lett. B* **774** (2017), 159-178 doi:10.1016/j.physletb.2017.09.058 [arXiv:1706.07122 [hep-ex]].
- [419] R. Aaij *et al.* [LHCb], “Improved limit on the branching fraction of the rare decay $K_s^0 \rightarrow \mu^+ \mu^-$,” *Eur. Phys. J. C* **77** (2017) no.10, 678 doi:10.1140/epjc/s10052-017-5230-x [arXiv:1706.00758 [hep-ex]].
- [420] R. Aaij *et al.* [LHCb], “Updated search for long-lived particles decaying to jet pairs,” *Eur. Phys. J. C* **77** (2017) no.12, 812 doi:10.1140/epjc/s10052-017-5178-x [arXiv:1705.07332 [hep-ex]].
- [421] R. Aaij *et al.* [LHCb], “Test of lepton universality with $B^0 \rightarrow K^{*0} \ell^+ \ell^-$ decays,” *JHEP* **08** (2017), 055 doi:10.1007/JHEP08(2017)055 [arXiv:1705.05802 [hep-ex]].
- [422] R. Aaij *et al.* [LHCb], “Measurement of B_s^0 and D_s^- meson lifetimes,” *Phys. Rev. Lett.* **119** (2017) no.10, 101801 doi:10.1103/PhysRevLett.119.101801 [arXiv:1705.03475 [hep-ex]].
- [423] R. Aaij *et al.* [LHCb], “Observation of charmless baryonic decays $B_{(s)}^0 \rightarrow p \bar{p} h^+ h'^-$,” *Phys. Rev. D* **96** (2017) no.5, 051103 doi:10.1103/PhysRevD.96.051103 [arXiv:1704.08497 [hep-ex]].
- [424] R. Aaij *et al.* [LHCb], “Resonances and CP violation in B_s^0 and $\bar{B}_s^0 \rightarrow J/\psi K^+ K^-$ decays in the mass region above the $\phi(1020)$,” *JHEP* **08** (2017), 037 doi:10.1007/JHEP08(2017)037 [arXiv:1704.08217 [hep-ex]].
- [425] R. Aaij *et al.* [LHCb], “Observation of the $B^+ \rightarrow D^{*-} K^+ \pi^+$ decay,” *Phys. Rev. D* **96** (2017) no.1, 011101 doi:10.1103/PhysRevD.96.011101 [arXiv:1704.07581 [hep-ex]].
- [426] R. Aaij *et al.* [LHCb], “Observation of the decays $\Lambda_b^0 \rightarrow \chi_{c1} p K^-$ and $\Lambda_b^0 \rightarrow \chi_{c2} p K^-$,” *Phys. Rev. Lett.* **119** (2017) no.6, 062001 doi:10.1103/PhysRevLett.119.062001 [arXiv:1704.07900 [hep-ex]].
- [427] R. Aaij *et al.* [LHCb], “First observation of a baryonic B_s^0 decay,” *Phys. Rev. Lett.* **119** (2017) no.4, 041802 doi:10.1103/PhysRevLett.119.041802 [arXiv:1704.07908 [hep-ex]].
- [428] R. Aaij *et al.* [LHCb], “Measurement of B^0 , B_s^0 , B^+ and Λ_b^0 production asymmetries in 7 and 8 TeV proton-proton collisions,” *Phys. Lett. B* **774** (2017), 139-158 doi:10.1016/j.physletb.2017.09.023 [arXiv:1703.08464 [hep-ex]].
- [429] R. Aaij *et al.* [LHCb], “Measurement of the $B_s^0 \rightarrow \mu^+ \mu^-$ branching fraction and effective lifetime and search for $B^0 \rightarrow \mu^+ \mu^-$ decays,” *Phys. Rev. Lett.* **118** (2017) no.19, 191801 doi:10.1103/PhysRevLett.118.191801 [arXiv:1703.05747 [hep-ex]].
- [430] R. Aaij *et al.* [LHCb], “Observation of five new narrow Ω_c^0 states decaying to $\Xi_c^+ K^-$,” *Phys. Rev. Lett.* **118** (2017) no.18, 182001 doi:10.1103/PhysRevLett.118.182001 [arXiv:1703.04639 [hep-ex]].
- [431] R. Aaij *et al.* [LHCb], “Search for the decays $B_s^0 \rightarrow \tau^+ \tau^-$ and $B^0 \rightarrow \tau^+ \tau^-$,” *Phys. Rev. Lett.* **118** (2017) no.25, 251802 doi:10.1103/PhysRevLett.118.251802 [arXiv:1703.02508 [hep-ex]].
- [432] R. Aaij *et al.* [LHCb], “Observation of the decay $\Lambda_b^0 \rightarrow p K^- \mu^+ \mu^-$ and a search for CP violation,” *JHEP* **06** (2017), 108 doi:10.1007/JHEP06(2017)108 [arXiv:1703.00256 [hep-ex]].
- [433] R. Aaij *et al.* [LHCb], “Observation of the decay $B_s^0 \rightarrow \eta_c \phi$ and evidence for $B_s^0 \rightarrow \eta_c \pi^+ \pi^-$,” *JHEP* **07** (2017), 021 doi:10.1007/JHEP07(2017)021 [arXiv:1702.08048 [hep-ex]].
- [434] R. Aaij *et al.* [LHCb], “Measurement of the CP violation parameter A_Γ in $D^0 \rightarrow K^+ K^-$ and $D^0 \rightarrow \pi^+ \pi^-$ decays,” *Phys. Rev. Lett.* **118** (2017) no.26, 261803 doi:10.1103/PhysRevLett.118.261803 [arXiv:1702.06490 [hep-ex]].
- [435] R. Aaij *et al.* [LHCb], “Observation of the suppressed decay $\Lambda_b^0 \rightarrow p \pi^- \mu^+ \mu^-$,” *JHEP* **04** (2017), 029 doi:10.1007/JHEP04(2017)029 [arXiv:1701.08705 [hep-ex]].

- [436] R. Aaij *et al.* [LHCb], “Study of the $D^0 p$ amplitude in $\Lambda_b^0 \rightarrow D^0 p \pi^-$ decays,” JHEP **05** (2017), 030 doi:10.1007/JHEP05(2017)030 [arXiv:1701.07873 [hep-ex]].
- [437] R. Aaij *et al.* [LHCb], “Measurement of the B^\pm production asymmetry and the CP asymmetry in $B^\pm \rightarrow J/\psi K^\pm$ decays,” Phys. Rev. D **95** (2017) no.5, 052005 doi:10.1103/PhysRevD.95.052005 [arXiv:1701.05501 [hep-ex]].
- [438] R. Aaij *et al.* [LHCb], “Observation of the $\Xi_b^- \rightarrow J/\psi \Lambda K^-$ decay,” Phys. Lett. B **772** (2017), 265-273 doi:10.1016/j.physletb.2017.06.045 [arXiv:1701.05274 [hep-ex]].
- [439] R. Aaij *et al.* [LHCb], “Study of J/ψ Production in Jets,” Phys. Rev. Lett. **118** (2017) no.19, 192001 doi:10.1103/PhysRevLett.118.192001 [arXiv:1701.05116 [hep-ex]].
- [440] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries in $D^\pm \rightarrow \eta' \pi^\pm$ and $D_s^\pm \rightarrow \eta' \pi^\pm$ decays,” Phys. Lett. B **771** (2017), 21-30 doi:10.1016/j.physletb.2017.05.013 [arXiv:1701.01871 [hep-ex]].
- [441] R. Aaij *et al.* [LHCb], “Observation of $B_c^+ \rightarrow D^0 K^+$ decays,” Phys. Rev. Lett. **118** (2017) no.11, 111803 doi:10.1103/PhysRevLett.118.111803 [arXiv:1701.01856 [hep-ex]].
- [442] R. Aaij *et al.* [LHCb], “Search for the $B_s^0 \rightarrow \eta' \phi$ decay,” JHEP **05** (2017), 158 doi:10.1007/JHEP05(2017)158 [arXiv:1612.08110 [hep-ex]].
- [443] R. Aaij *et al.* [LHCb], “Search for long-lived scalar particles in $B^+ \rightarrow K^+ \chi(\mu^+ \mu^-)$ decays,” Phys. Rev. D **95** (2017) no.7, 071101 doi:10.1103/PhysRevD.95.071101 [arXiv:1612.07818 [hep-ex]].
- [444] A. Lupato [LHCb], “Test of lepton flavour universality with semi-tauonic decays of b -hadrons at LHCb,” PoS **HQL2016** (2017), 066 doi:10.22323/1.274.0066
- [445] R. Aaij *et al.* [LHCb], “Measurement of the J/ψ pair production cross-section in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **06** (2017), 047 [erratum: JHEP **10** (2017), 068] doi:10.1007/JHEP06(2017)047 [arXiv:1612.07451 [hep-ex]].
- [446] R. Aaij *et al.* [LHCb], “Observation of $B_c^+ \rightarrow J/\psi D^{(*)} K^{(*)}$ decays,” Phys. Rev. D **95** (2017) no.3, 032005 doi:10.1103/PhysRevD.95.032005 [arXiv:1612.07421 [hep-ex]].
- [447] R. Aaij *et al.* [LHCb], “Measurement of the phase difference between short- and long-distance amplitudes in the $B^+ \rightarrow K^+ \mu^+ \mu^-$ decay,” Eur. Phys. J. C **77** (2017) no.3, 161 doi:10.1140/epjc/s10052-017-4703-2 [arXiv:1612.06764 [hep-ex]].
- [448] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions and difference in CP asymmetries of the decays $B^+ \rightarrow J/\psi \pi^+$ and $B^+ \rightarrow J/\psi K^+$,” JHEP **03** (2017), 036 doi:10.1007/JHEP03(2017)036 [arXiv:1612.06116 [hep-ex]].
- [449] R. Aaij *et al.* [LHCb], “Measurement of the b -quark production cross-section in 7 and 13 TeV pp collisions,” Phys. Rev. Lett. **118** (2017) no.5, 052002 [erratum: Phys. Rev. Lett. **119** (2017) no.16, 169901] doi:10.1103/PhysRevLett.118.052002 [arXiv:1612.05140 [hep-ex]].
- [450] R. Aaij *et al.* [LHCb], “Search for CP violation in the phase space of $D^0 \rightarrow \pi^+ \pi^- \pi^+ \pi^-$ decays,” Phys. Lett. B **769** (2017), 345-356 doi:10.1016/j.physletb.2017.03.062 [arXiv:1612.03207 [hep-ex]].
- [451] R. Aaij *et al.* [LHCb], “Observation of the decay $\Xi_b^- \rightarrow p K^- K^-$,” Phys. Rev. Lett. **118** (2017) no.7, 071801 doi:10.1103/PhysRevLett.118.071801 [arXiv:1612.02244 [hep-ex]].
- [452] R. Aaij *et al.* [LHCb], “Search for massive long-lived particles decaying semileptonically in the LHCb detector,” Eur. Phys. J. C **77** (2017) no.4, 224 doi:10.1140/epjc/s10052-017-4744-6 [arXiv:1612.00945 [hep-ex]].
- [453] R. Aaij *et al.* [LHCb], “Evidence for the two-body charmless baryonic decay $B^+ \rightarrow p \bar{\Lambda}$,” JHEP **04** (2017), 162 doi:10.1007/JHEP04(2017)162 [arXiv:1611.07805 [hep-ex]].

- [454] R. Aaij *et al.* [LHCb], “Search for decays of neutral beauty mesons into four muons,” JHEP **03** (2017), 001 doi:10.1007/JHEP03(2017)001 [arXiv:1611.07704 [hep-ex]].
- [455] R. Aaij *et al.* [LHCb], “Measurements of charm mixing and CP violation using $D^0 \rightarrow K^\pm \pi^\mp$ decays,” Phys. Rev. D **95** (2017) no.5, 052004 [erratum: Phys. Rev. D **96** (2017) no.9, 099907] doi:10.1103/PhysRevD.95.052004 [arXiv:1611.06143 [hep-ex]].
- [456] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ from a combination of LHCb results,” JHEP **12** (2016), 087 doi:10.1007/JHEP12(2016)087 [arXiv:1611.03076 [hep-ex]].
- [457] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $D^0 \rightarrow K^- K^+$ decays,” Phys. Lett. B **767** (2017), 177-187 doi:10.1016/j.physletb.2017.01.061 [arXiv:1610.09476 [hep-ex]].
- [458] R. Aaij *et al.* [LHCb], “Observation of the annihilation decay mode $B^0 \rightarrow K^+ K^-$,” Phys. Rev. Lett. **118** (2017) no.8, 081801 doi:10.1103/PhysRevLett.118.081801 [arXiv:1610.08288 [hep-ex]].
- [459] R. Aaij *et al.* [LHCb], “Measurement of forward $t\bar{t}$, $W + b\bar{b}$ and $W + c\bar{c}$ production in pp collisions at $\sqrt{s} = 8$ TeV,” Phys. Lett. B **767** (2017), 110-120 doi:10.1016/j.physletb.2017.01.044 [arXiv:1610.08142 [hep-ex]].
- [460] R. Aaij *et al.* [LHCb], “New algorithms for identifying the flavour of B^0 mesons using pions and protons,” Eur. Phys. J. C **77** (2017) no.4, 238 doi:10.1140/epjc/s10052-017-4731-y [arXiv:1610.06019 [hep-ex]].
- [461] R. Aaij *et al.* [LHCb], “Observation of the decay $B_s^0 \rightarrow \phi \pi^+ \pi^-$ and evidence for $B^0 \rightarrow \phi \pi^+ \pi^-$,” Phys. Rev. D **95** (2017) no.1, 012006 doi:10.1103/PhysRevD.95.012006 [arXiv:1610.05187 [hep-ex]].
- [462] R. Aaij *et al.* [LHCb], “Search for the CP -violating strong decays $\eta \rightarrow \pi^+ \pi^-$ and $\eta'(958) \rightarrow \pi^+ \pi^-$,” Phys. Lett. B **764** (2017), 233-240 doi:10.1016/j.physletb.2016.11.032 [arXiv:1610.03666 [hep-ex]].
- [463] R. Aaij *et al.* [LHCb], “Measurements of prompt charm production cross-sections in pp collisions at $\sqrt{s} = 5$ TeV,” JHEP **06** (2017), 147 doi:10.1007/JHEP06(2017)147 [arXiv:1610.02230 [hep-ex]].
- [464] R. Aaij *et al.* [LHCb], “Observation of $B^+ \rightarrow J/\psi 3\pi^+ 2\pi^-$ and $B^+ \rightarrow \psi(2S)\pi^+ \pi^+ \pi^-$ decays,” Eur. Phys. J. C **77** (2017) no.2, 72 doi:10.1140/epjc/s10052-017-4610-6 [arXiv:1610.01383 [hep-ex]].
- [465] R. Aaij *et al.* [LHCb], “Measurement of matter-antimatter differences in beauty baryon decays,” Nature Phys. **13** (2017), 391-396 doi:10.1038/nphys4021 [arXiv:1609.05216 [hep-ex]].
- [466] R. Aaij *et al.* [LHCb], “Differential branching fraction and angular moments analysis of the decay $B^0 \rightarrow K^+ \pi^- \mu^+ \mu^-$ in the $K_{0,2}^*(1430)^0$ region,” JHEP **12** (2016), 065 doi:10.1007/JHEP12(2016)065 [arXiv:1609.04736 [hep-ex]].
- [467] R. Aaij *et al.* [LHCb], “Search for Higgs-like bosons decaying into long-lived exotic particles,” Eur. Phys. J. C **76** (2016) no.12, 664 doi:10.1140/epjc/s10052-016-4489-7 [arXiv:1609.03124 [hep-ex]].
- [468] R. Aaij *et al.* [LHCb], “First experimental study of photon polarization in radiative B_s^0 decays,” Phys. Rev. Lett. **118** (2017) no.2, 021801 doi:10.1103/PhysRevLett.118.109901 [arXiv:1609.02032 [hep-ex]].
- [469] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow D^+ D^-$ decays,” Phys. Rev. Lett. **117** (2016) no.26, 261801 doi:10.1103/PhysRevLett.117.261801 [arXiv:1608.06620 [hep-ex]].
- [470] R. Aaij *et al.* [LHCb], “First study of the CP -violating phase and decay-width difference in $B_s^0 \rightarrow \psi(2S)\phi$ decays,” Phys. Lett. B **762** (2016), 253-262 doi:10.1016/j.physletb.2016.09.028 [arXiv:1608.04855 [hep-ex]].
- [471] R. Aaij *et al.* [LHCb], “Search for the suppressed decays $B^+ \rightarrow K^+ K^+ \pi^-$ and $B^+ \rightarrow \pi^+ \pi^+ K^-$,” Phys. Lett. B **765** (2017), 307-316 doi:10.1016/j.physletb.2016.11.053 [arXiv:1608.01478 [hep-ex]].

- [472] R. Aaij *et al.* [LHCb], “Measurement of forward $W \rightarrow e\nu$ production in pp collisions at $\sqrt{s} = 8$ TeV,” JHEP **10** (2016), 030 doi:10.1007/JHEP10(2016)030 [arXiv:1608.01484 [hep-ex]].
- [473] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B^- \rightarrow D^+\pi^-\pi^-$ decays,” Phys. Rev. D **94** (2016) no.7, 072001 doi:10.1103/PhysRevD.94.072001 [arXiv:1608.01289 [hep-ex]].
- [474] R. Aaij *et al.* [LHCb], “Search for Structure in the $B_s^0\pi^\pm$ Invariant Mass Spectrum,” Phys. Rev. Lett. **117** (2016) no.15, 152003 doi:10.1103/PhysRevLett.117.152003 [arXiv:1608.00435 [hep-ex]].
- [475] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions $\mathcal{B}(B_c^+ \rightarrow J/\psi K^+)/\mathcal{B}(B_c^+ \rightarrow J/\psi\pi^+)$,” JHEP **09** (2016), 153 doi:10.1007/JHEP09(2016)153 [arXiv:1607.06823 [hep-ex]].
- [476] R. Aaij *et al.* [LHCb], “Measurement of the $B_s^0 \rightarrow J/\psi\eta$ lifetime,” Phys. Lett. B **762** (2016), 484-492 doi:10.1016/j.physletb.2016.10.006 [arXiv:1607.06314 [hep-ex]].
- [477] R. Aaij *et al.* [LHCb], “Observation of $\eta_c(2S) \rightarrow p\bar{p}$ and search for $X(3872) \rightarrow p\bar{p}$ decays,” Phys. Lett. B **769** (2017), 305-313 doi:10.1016/j.physletb.2017.03.046 [arXiv:1607.06446 [hep-ex]].
- [478] R. Aaij *et al.* [LHCb], “Measurement of the forward Z boson production cross-section in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **09** (2016), 136 doi:10.1007/JHEP09(2016)136 [arXiv:1607.06495 [hep-ex]].
- [479] R. Aaij *et al.* [LHCb], “Study of B_c^+ decays to the $K^+K^-\pi^+$ final state and evidence for the decay $B_c^+ \rightarrow \chi_{c0}\pi^+$,” Phys. Rev. D **94** (2016) no.9, 091102 doi:10.1103/PhysRevD.94.091102 [arXiv:1607.06134 [hep-ex]].
- [480] R. Aaij *et al.* [LHCb], “Observation of $J/\psi\phi$ structures consistent with exotic states from amplitude analysis of $B^+ \rightarrow J/\psi\phi K^+$ decays,” Phys. Rev. Lett. **118** (2017) no.2, 022003 doi:10.1103/PhysRevLett.118.022003 [arXiv:1606.07895 [hep-ex]].
- [481] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B^+ \rightarrow J/\psi\phi K^+$ decays,” Phys. Rev. D **95** (2017) no.1, 012002 doi:10.1103/PhysRevD.95.012002 [arXiv:1606.07898 [hep-ex]].
- [482] R. Aaij *et al.* [LHCb], “Evidence for exotic hadron contributions to $\Lambda_b^0 \rightarrow J/\psi p\pi^-$ decays,” Phys. Rev. Lett. **117** (2016) no.8, 082003 doi:10.1103/PhysRevLett.117.082003 [arXiv:1606.06999 [hep-ex]].
- [483] R. Aaij *et al.* [LHCb], “Measurements of the S-wave fraction in $B^0 \rightarrow K^+\pi^-\mu^+\mu^-$ decays and the $B^0 \rightarrow K^*(892)^0\mu^+\mu^-$ differential branching fraction,” JHEP **11** (2016), 047 [erratum: JHEP **04** (2017), 142] doi:10.1007/JHEP11(2016)047 [arXiv:1606.04731 [hep-ex]].
- [484] R. Aaij *et al.* [LHCb], “Measurement of the CP asymmetry in $B_s^0 - \bar{B}_s^0$ mixing,” Phys. Rev. Lett. **117** (2016) no.6, 061803 doi:10.1103/PhysRevLett.117.061803 [arXiv:1605.09768 [hep-ex]].
- [485] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ using $B^0 \rightarrow DK^{*0}$ with $D \rightarrow K_S^0\pi^+\pi^-$ decays,” JHEP **08** (2016), 137 doi:10.1007/JHEP08(2016)137 [arXiv:1605.01082 [hep-ex]].
- [486] R. Aaij *et al.* [LHCb], “Measurement of forward W and Z boson production in association with jets in proton-proton collisions at $\sqrt{s} = 8$ TeV,” JHEP **05** (2016), 131 doi:10.1007/JHEP05(2016)131 [arXiv:1605.00951 [hep-ex]].
- [487] R. Aaij *et al.* [LHCb], “Model-independent evidence for $J/\psi p$ contributions to $\Lambda_b^0 \rightarrow J/\psi p K^-$ decays,” Phys. Rev. Lett. **117** (2016) no.8, 082002 doi:10.1103/PhysRevLett.117.082002 [arXiv:1604.05708 [hep-ex]].
- [488] R. Aaij *et al.* [LHCb], “Measurement of the properties of the Ξ_b^{*0} baryon,” JHEP **05** (2016), 161 doi:10.1007/JHEP05(2016)161 [arXiv:1604.03896 [hep-ex]].

- [489] R. Aaij *et al.* [LHCb], “A precise measurement of the B^0 meson oscillation frequency,” *Eur. Phys. J. C* **76** (2016) no.7, 412 doi:10.1140/epjc/s10052-016-4250-2 [arXiv:1604.03475 [hep-ex]].
- [490] R. Aaij *et al.* [LHCb], “Model-independent measurement of the CKM angle γ using $B^0 \rightarrow DK^{*0}$ decays with $D \rightarrow K_S^0 \pi^+ \pi^-$ and $K_S^0 K^+ K^-$,” *JHEP* **06** (2016), 131 doi:10.1007/JHEP06(2016)131 [arXiv:1604.01525 [hep-ex]].
- [491] R. Aaij *et al.* [LHCb], “Measurement of the mass and lifetime of the Ω_b^- baryon,” *Phys. Rev. D* **93** (2016) no.9, 092007 doi:10.1103/PhysRevD.93.092007 [arXiv:1604.01412 [hep-ex]].
- [492] R. Aaij *et al.* [LHCb], “Measurement of CP observables in $B^\pm \rightarrow DK^\pm$ and $B^\pm \rightarrow D\pi^\pm$ with two- and four-body D decays,” *Phys. Lett. B* **760** (2016), 117-131 doi:10.1016/j.physletb.2016.06.022 [arXiv:1603.08993 [hep-ex]].
- [493] R. Aaij *et al.* [LHCb], “Search for B_c^+ decays to the $p\bar{p}\pi^+$ final state,” *Phys. Lett. B* **759** (2016), 313-321 doi:10.1016/j.physletb.2016.05.074 [arXiv:1603.07037 [hep-ex]].
- [494] R. Aaij *et al.* [LHCb], “Observation of $\Lambda_b^0 \rightarrow \psi(2S)pK^-$ and $\Lambda_b^0 \rightarrow J/\psi\pi^+\pi^-pK^-$ decays and a measurement of the Λ_b^0 baryon mass,” *JHEP* **05** (2016), 132 doi:10.1007/JHEP05(2016)132 [arXiv:1603.06961 [hep-ex]].
- [495] R. Aaij *et al.* [LHCb], “Search for violations of Lorentz invariance and CPT symmetry in $B_{(s)}^0$ mixing,” *Phys. Rev. Lett.* **116** (2016) no.24, 241601 doi:10.1103/PhysRevLett.116.241601 [arXiv:1603.04804 [hep-ex]].
- [496] R. Aaij *et al.* [LHCb], “Observation of the $\Lambda_b^0 \rightarrow \Lambda\phi$ decay,” *Phys. Lett. B* **759** (2016), 282-292 doi:10.1016/j.physletb.2016.05.077 [arXiv:1603.02870 [hep-ex]].
- [497] R. Aaij *et al.* [LHCb], “Observation of $B_s^0 \rightarrow \bar{D}^0 K_S^0$ and evidence for $B_s^0 \rightarrow \bar{D}^{*0} K_S^0$ decays,” *Phys. Rev. Lett.* **116** (2016) no.16, 161802 doi:10.1103/PhysRevLett.116.161802 [arXiv:1603.02408 [hep-ex]].
- [498] R. Aaij *et al.* [LHCb], “Observations of $\Lambda_b^0 \rightarrow \Lambda K^+ \pi^-$ and $\Lambda_b^0 \rightarrow \Lambda K^+ K^-$ decays and searches for other Λ_b^0 and Ξ_b^0 decays to $\Lambda h^+ h'^-$ final states,” *JHEP* **05** (2016), 081 doi:10.1007/JHEP05(2016)081 [arXiv:1603.00413 [hep-ex]].
- [499] R. Aaij *et al.* [LHCb], “Measurement of the $B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-}$ branching fractions,” *Phys. Rev. D* **93** (2016) no.9, 092008 doi:10.1103/PhysRevD.93.092008 [arXiv:1602.07543 [hep-ex]].
- [500] R. Aaij *et al.* [LHCb], “First observation of $D^0 - \bar{D}^0$ oscillations in $D^0 \rightarrow K^+ \pi^- \pi^+ \pi^-$ decays and measurement of the associated coherence parameters,” *Phys. Rev. Lett.* **116** (2016) no.24, 241801 doi:10.1103/PhysRevLett.116.241801 [arXiv:1602.07224 [hep-ex]].
- [501] R. Aaij *et al.* [LHCb], “A new algorithm for identifying the flavour of B_s^0 mesons at LHCb,” *JINST* **11** (2016) no.05, P05010 doi:10.1088/1748-0221/11/05/P05010 [arXiv:1602.07252 [hep-ex]].
- [502] R. Aaij *et al.* [LHCb], “Constraints on the unitarity triangle angle γ from Dalitz plot analysis of $B^0 \rightarrow DK^+ \pi^-$ decays,” *Phys. Rev. D* **93** (2016) no.11, 112018 [erratum: *Phys. Rev. D* **94** (2016) no.7, 079902] doi:10.1103/PhysRevD.93.112018 [arXiv:1602.03455 [hep-ex]].
- [503] R. Aaij *et al.* [LHCb], “Measurement of the difference of time-integrated CP asymmetries in $D^0 \rightarrow K^- K^+$ and $D^0 \rightarrow \pi^- \pi^+$ decays,” *Phys. Rev. Lett.* **116** (2016) no.19, 191601 doi:10.1103/PhysRevLett.116.191601 [arXiv:1602.03160 [hep-ex]].
- [504] R. Aaij *et al.* [LHCb], “Study of $\psi(2S)$ production and cold nuclear matter effects in pPb collisions at $\sqrt{s_{NN}} = 5$ TeV,” *JHEP* **03** (2016), 133 doi:10.1007/JHEP03(2016)133 [arXiv:1601.07878 [nucl-ex]].

- [505] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow J/\psi\phi\phi$ decay,” JHEP **03** (2016), 040 doi:10.1007/JHEP03(2016)040 [arXiv:1601.05284 [hep-ex]].
- [506] R. Aaij *et al.* [LHCb], “Study of $D_{sJ}^{(*)+}$ mesons decaying to $D^{*+} K_S^0$ and $D^{*0} K^+$ final states,” JHEP **02** (2016), 133 doi:10.1007/JHEP02(2016)133 [arXiv:1601.01495 [hep-ex]].
- [507] R. Aaij *et al.* [LHCb], “Physics case for an LHCb Upgrade II - Opportunities in flavour physics, and beyond, in the HL-LHC era,” [arXiv:1808.08865 [hep-ex]].
- [508] R. Aaij *et al.* [LHCb], “Angular analysis of the $B^0 \rightarrow K^{*0}\mu^+\mu^-$ decay using 3 fb^{-1} of integrated luminosity,” JHEP **02** (2016), 104 doi:10.1007/JHEP02(2016)104 [arXiv:1512.04442 [hep-ex]].
- [509] R. Aaij *et al.* [LHCb], “First observation of the rare $B^+ \rightarrow D^+K^+\pi^-$ decay,” Phys. Rev. D **93** (2016) no.5, 051101 [erratum: Phys. Rev. D **93** (2016) no.11, 119902] doi:10.1103/PhysRevD.93.051101 [arXiv:1512.02494 [hep-ex]].
- [510] R. Aaij *et al.* [LHCb], “Search for the lepton-flavour violating decay $D^0 \rightarrow e^\pm\mu^\mp$,” Phys. Lett. B **754** (2016), 167-175 doi:10.1016/j.physletb.2016.01.029 [arXiv:1512.00322 [hep-ex]].
- [511] R. Aaij *et al.* [LHCb], “Measurements of long-range near-side angular correlations in $\sqrt{s_{NN}} = 5\text{ TeV}$ proton-lead collisions in the forward region,” Phys. Lett. B **762** (2016), 473-483 doi:10.1016/j.physletb.2016.09.064 [arXiv:1512.00439 [nucl-ex]].
- [512] R. Aaij *et al.* [LHCb], “Measurement of forward W and Z boson production in pp collisions at $\sqrt{s} = 8\text{ TeV}$,” JHEP **01** (2016), 155 doi:10.1007/JHEP01(2016)155 [arXiv:1511.08039 [hep-ex]].
- [513] R. Aaij *et al.* [LHCb], “First observation of the decay $D^0 \rightarrow K^-\pi^+\mu^+\mu^-$ in the $\rho^0\text{-}\omega$ region of the dimuon mass spectrum,” Phys. Lett. B **757** (2016), 558-567 doi:10.1016/j.physletb.2016.04.029 [arXiv:1510.08367 [hep-ex]].
- [514] R. Aaij *et al.* [LHCb], “Production of associated Y and open charm hadrons in pp collisions at $\sqrt{s} = 7$ and 8 TeV via double parton scattering,” JHEP **07** (2016), 052 doi:10.1007/JHEP07(2016)052 [arXiv:1510.05949 [hep-ex]].
- [515] R. Aaij *et al.* [LHCb], “Search for the rare decays $B^0 \rightarrow J/\psi\gamma$ and $B_s^0 \rightarrow J/\psi\gamma$,” Phys. Rev. D **92** (2015) no.11, 112002 doi:10.1103/PhysRevD.92.112002 [arXiv:1510.04866 [hep-ex]].
- [516] R. Aaij *et al.* [LHCb], “Evidence for the strangeness-changing weak decay $\Xi_b^- \rightarrow \Lambda_b^0\pi^-$,” Phys. Rev. Lett. **115** (2015) no.24, 241801 doi:10.1103/PhysRevLett.115.241801 [arXiv:1510.03829 [hep-ex]].
- [517] R. Aaij *et al.* [LHCb], “Model-independent confirmation of the $Z(4430)^-$ state,” Phys. Rev. D **92** (2015) no.11, 112009 doi:10.1103/PhysRevD.92.112009 [arXiv:1510.01951 [hep-ex]].
- [518] R. Aaij *et al.* [LHCb], “Model-independent measurement of mixing parameters in $D^0 \rightarrow K_S^0\pi^+\pi^-$ decays,” JHEP **04** (2016), 033 doi:10.1007/JHEP04(2016)033 [arXiv:1510.01664 [hep-ex]].
- [519] R. Aaij *et al.* [LHCb], “Measurements of prompt charm production cross-sections in pp collisions at $\sqrt{s} = 13\text{ TeV}$,” JHEP **03** (2016), 159 [erratum: JHEP **09** (2016), 013; erratum: JHEP **05** (2017), 074] doi:10.1007/JHEP03(2016)159 [arXiv:1510.01707 [hep-ex]].
- [520] R. Aaij *et al.* [LHCb], “Measurement of the forward-backward asymmetry in $Z/\gamma^* \rightarrow \mu^+\mu^-$ decays and determination of the effective weak mixing angle,” JHEP **11** (2015), 190 doi:10.1007/JHEP11(2015)190 [arXiv:1509.07645 [hep-ex]].
- [521] R. Aaij *et al.* [LHCb], “Studies of the resonance structure in $D^0 \rightarrow K_S^0K^\pm\pi^\mp$ decays,” Phys. Rev. D **93** (2016) no.5, 052018 doi:10.1103/PhysRevD.93.052018 [arXiv:1509.06628 [hep-ex]].
- [522] R. Aaij *et al.* [LHCb], “Forward production of Υ mesons in pp collisions at $\sqrt{s} = 7$ and 8 TeV ,” JHEP **11** (2015), 103 doi:10.1007/JHEP11(2015)103 [arXiv:1509.02372 [hep-ex]].

- [523] R. Aaij *et al.* [LHCb], “Measurement of forward J/ψ production cross-sections in pp collisions at $\sqrt{s} = 13$ TeV,” JHEP **10** (2015), 172 [erratum: JHEP **05** (2017), 063] doi:10.1007/JHEP10(2015)172 [arXiv:1509.00771 [hep-ex]].
- [524] R. Aaij *et al.* [LHCb], “Study of the production of Λ_b^0 and \bar{B}^0 hadrons in pp collisions and first measurement of the $\Lambda_b^0 \rightarrow J/\psi p K^-$ branching fraction,” Chin. Phys. C **40** (2016) no.1, 011001 doi:10.1088/1674-1137/40/1/011001 [arXiv:1509.00292 [hep-ex]].
- [525] R. Aaij *et al.* [LHCb], “Measurement of CP violation parameters and polarisation fractions in $B_s^0 \rightarrow J/\psi \bar{K}^{*0}$ decays,” JHEP **11** (2015), 082 doi:10.1007/JHEP11(2015)082 [arXiv:1509.00400 [hep-ex]].
- [526] R. Aaij *et al.* [LHCb], “First measurement of the differential branching fraction and CP asymmetry of the $B^\pm \rightarrow \pi^\pm \mu^+ \mu^-$ decay,” JHEP **10** (2015), 034 doi:10.1007/JHEP10(2015)034 [arXiv:1509.00414 [hep-ex]].
- [527] R. Aaij *et al.* [LHCb], “Measurement of the time-integrated CP asymmetry in $D^0 \rightarrow K_S^0 K_S^0$ decays,” JHEP **10** (2015), 055 doi:10.1007/JHEP10(2015)055 [arXiv:1508.06087 [hep-ex]].
- [528] R. Aaij *et al.* [LHCb], “Search for hidden-sector bosons in $B^0 \rightarrow K^{*0} \mu^+ \mu^-$ decays,” Phys. Rev. Lett. **115** (2015) no.16, 161802 doi:10.1103/PhysRevLett.115.161802 [arXiv:1508.04094 [hep-ex]].
- [529] R. Aaij *et al.* [LHCb], “Measurement of the $B_s^0 \rightarrow \phi \phi$ branching fraction and search for the decay $B^0 \rightarrow \phi \phi$,” JHEP **10** (2015), 053 doi:10.1007/JHEP10(2015)053 [arXiv:1508.00788 [hep-ex]].
- [530] R. Aaij *et al.* [LHCb], “B flavour tagging using charm decays at the LHCb experiment,” JINST **10** (2015) no.10, P10005 doi:10.1088/1748-0221/10/10/P10005 [arXiv:1507.07892 [hep-ex]].
- [531] R. Aaij *et al.* [LHCb], “Measurement of the branching fraction ratio $\mathcal{B}(B_c^+ \rightarrow \psi(2S)\pi^+)/\mathcal{B}(B_c^+ \rightarrow J/\psi\pi^+)$,” Phys. Rev. D **92** (2015) no.7, 072007 doi:10.1103/PhysRevD.92.072007 [arXiv:1507.03516 [hep-ex]].
- [532] R. Aaij *et al.* [LHCb], “Observation of $J/\psi p$ Resonances Consistent with Pentaquark States in $\Lambda_b^0 \rightarrow J/\psi K^- p$ Decays,” Phys. Rev. Lett. **115** (2015), 072001 doi:10.1103/PhysRevLett.115.072001 [arXiv:1507.03414 [hep-ex]].
- [533] R. Aaij *et al.* [LHCb], “First observation of the decay $B_s^0 \rightarrow K_S^0 K^{*(892)^0}$ at LHCb,” JHEP **01** (2016), 012 doi:10.1007/JHEP01(2016)012 [arXiv:1506.08634 [hep-ex]].
- [534] R. Aaij *et al.* [LHCb], “Search for long-lived heavy charged particles using a ring imaging Cherenkov technique at LHCb,” Eur. Phys. J. C **75** (2015) no.12, 595 doi:10.1140/epjc/s10052-015-3809-7 [arXiv:1506.09173 [hep-ex]].
- [535] R. Aaij *et al.* [LHCb], “Angular analysis and differential branching fraction of the decay $B_s^0 \rightarrow \phi \mu^+ \mu^-$,” JHEP **09** (2015), 179 doi:10.1007/JHEP09(2015)179 [arXiv:1506.08777 [hep-ex]].
- [536] R. Aaij *et al.* [LHCb], “Measurement of the ratio of branching fractions $\mathcal{B}(\bar{B}^0 \rightarrow D^{*+} \tau^- \bar{\nu}_\tau)/\mathcal{B}(\bar{B}^0 \rightarrow D^{*+} \mu^- \bar{\nu}_\mu)$,” Phys. Rev. Lett. **115** (2015) no.11, 111803 [erratum: Phys. Rev. Lett. **115** (2015) no.15, 159901] doi:10.1103/PhysRevLett.115.111803 [arXiv:1506.08614 [hep-ex]].
- [537] R. Aaij *et al.* [LHCb], “First observation of top quark production in the forward region,” Phys. Rev. Lett. **115** (2015) no.11, 112001 doi:10.1103/PhysRevLett.115.112001 [arXiv:1506.00903 [hep-ex]].
- [538] R. Aaij *et al.* [LHCb], “Measurement of the exclusive Υ production cross-section in pp collisions at $\sqrt{s} = 7$ TeV and 8 TeV,” JHEP **09** (2015), 084 doi:10.1007/JHEP09(2015)084 [arXiv:1505.08139 [hep-ex]].

- [539] R. Aaij *et al.* [LHCb], “Measurement of the forward Z boson production cross-section in pp collisions at $\sqrt{s} = 7$ TeV,” JHEP **08** (2015), 039 doi:10.1007/JHEP08(2015)039 [arXiv:1505.07024 [hep-ex]].
- [540] R. Aaij *et al.* [LHCb], “Study of $B^- \rightarrow DK^- \pi^+ \pi^-$ and $B^- \rightarrow D \pi^- \pi^+ \pi^-$ decays and determination of the CKM angle γ ,” Phys. Rev. D **92** (2015) no.11, 112005 doi:10.1103/PhysRevD.92.112005 [arXiv:1505.07044 [hep-ex]].
- [541] R. Aaij *et al.* [LHCb], “Study of W boson production in association with beauty and charm,” Phys. Rev. D **92** (2015) no.5, 052001 doi:10.1103/PhysRevD.92.052001 [arXiv:1505.04051 [hep-ex]].
- [542] R. Aaij *et al.* [LHCb], “Search for the $\Lambda_b^0 \rightarrow \Lambda \eta'$ and $\Lambda_b^0 \rightarrow \Lambda \eta$ decays with the LHCb detector,” JHEP **09** (2015), 006 doi:10.1007/JHEP09(2015)006 [arXiv:1505.03295 [hep-ex]].
- [543] R. Aaij *et al.* [LHCb], “Search for the decay $B_s^0 \rightarrow \bar{D}^0 f_0(980)$,” JHEP **08** (2015), 005 doi:10.1007/JHEP08(2015)005 [arXiv:1505.01654 [hep-ex]].
- [544] R. Aaij *et al.* [LHCb], “Dalitz plot analysis of $B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$ decays,” Phys. Rev. D **92** (2015) no.3, 032002 doi:10.1103/PhysRevD.92.032002 [arXiv:1505.01710 [hep-ex]].
- [545] R. Aaij *et al.* [LHCb], “Amplitude analysis of $B^0 \rightarrow \bar{D}^0 K^+ \pi^-$ decays,” Phys. Rev. D **92** (2015) no.1, 012012 doi:10.1103/PhysRevD.92.012012 [arXiv:1505.01505 [hep-ex]].
- [546] R. Aaij *et al.* [LHCb], “Identification of beauty and charm quark jets at LHCb,” JINST **10** (2015) no.06, P06013 doi:10.1088/1748-0221/10/06/P06013 [arXiv:1504.07670 [hep-ex]].
- [547] R. Aaij *et al.* [LHCb], “Till Moritz Karbach, Scientific Legacy,” LHCb-PUB-2015-010.
- [548] R. Aaij *et al.* [LHCb], “Quantum numbers of the $X(3872)$ state and orbital angular momentum in its $\rho^0 J\psi$ decay,” Phys. Rev. D **92** (2015) no.1, 011102 doi:10.1103/PhysRevD.92.011102 [arXiv:1504.06339 [hep-ex]].
- [549] R. Aaij *et al.* [LHCb], “A study of CP violation in $B^\mp \rightarrow Dh^\mp$ ($h = K, \pi$) with the modes $D \rightarrow K^\mp \pi^\pm \pi^0$, $D \rightarrow \pi^+ \pi^- \pi^0$ and $D \rightarrow K^+ K^- \pi^0$,” Phys. Rev. D **91** (2015) no.11, 112014 doi:10.1103/PhysRevD.91.112014 [arXiv:1504.05442 [hep-ex]].
- [550] R. Aaij *et al.* [LHCb], “Determination of the quark coupling strength $|V_{ub}|$ using baryonic decays,” Nature Phys. **11** (2015), 743-747 doi:10.1038/nphys3415 [arXiv:1504.01568 [hep-ex]].
- [551] R. Aaij *et al.* [LHCb], “First observation and measurement of the branching fraction for the decay $B_s^0 \rightarrow D_s^{*\mp} K^\pm$,” JHEP **06** (2015), 130 doi:10.1007/JHEP06(2015)130 [arXiv:1503.09086 [hep-ex]].
- [552] R. Aaij *et al.* [LHCb], “Observation of the $B^0 \rightarrow \rho^0 \rho^0$ decay from an amplitude analysis of $B^0 \rightarrow (\pi^+ \pi^-)(\pi^+ \pi^-)$ decays,” Phys. Lett. B **747** (2015), 468-478 doi:10.1016/j.physletb.2015.06.027 [arXiv:1503.07770 [hep-ex]].
- [553] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow \eta' \eta'$ decay,” Phys. Rev. Lett. **115** (2015) no.5, 051801 doi:10.1103/PhysRevLett.115.051801 [arXiv:1503.07483 [hep-ex]].
- [554] R. Aaij *et al.* [LHCb], “Observation of the decay $\bar{B}_s^0 \rightarrow \psi(2S) K^+ \pi^-$,” Phys. Lett. B **747** (2015), 484-494 doi:10.1016/j.physletb.2015.06.038 [arXiv:1503.07112 [hep-ex]].
- [555] R. Aaij *et al.* [LHCb], “Measurement of the time-dependent CP asymmetries in $B_s^0 \rightarrow J/\psi K_S^0$,” JHEP **06** (2015), 131 doi:10.1007/JHEP06(2015)131 [arXiv:1503.07055 [hep-ex]].
- [556] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B^0 \rightarrow J/\psi K_S^0$ decays,” Phys. Rev. Lett. **115** (2015) no.3, 031601 doi:10.1103/PhysRevLett.115.031601 [arXiv:1503.07089 [hep-ex]].
- [557] R. Aaij *et al.* [LHCb], “Differential branching fraction and angular analysis of $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$ decays,” JHEP **06** (2015), 115 [erratum: JHEP **09** (2018), 145] doi:10.1007/JHEP06(2015)115 [arXiv:1503.07138 [hep-ex]].

- [558] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries and polarisation fractions in $B_s^0 \rightarrow K^{*0} \bar{K}^{*0}$ decays,” JHEP **07** (2015), 166 doi:10.1007/JHEP07(2015)166 [arXiv:1503.05362 [hep-ex]].
- [559] R. Aaij *et al.* [LHCb], “First observation and amplitude analysis of the $B^- \rightarrow D^+ K^- \pi^-$ decay,” Phys. Rev. D **91** (2015) no.9, 092002 [erratum: Phys. Rev. D **93** (2016) no.11, 119901] doi:10.1103/PhysRevD.91.092002 [arXiv:1503.02995 [hep-ex]].
- [560] R. Aaij *et al.* [LHCb], “Measurement of forward $Z \rightarrow e^+e^-$ production at $\sqrt{s} = 8$ TeV,” JHEP **05** (2015), 109 doi:10.1007/JHEP05(2015)109 [arXiv:1503.00963 [hep-ex]].
- [561] R. Aaij *et al.* [LHCb], “Precise measurements of the properties of the $B_1(5721)^{0,+}$ and $B_2^*(5747)^{0,+}$ states and observation of $B^{+,0}\pi^{-,+}$ mass structures,” JHEP **04** (2015), 024 doi:10.1007/JHEP04(2015)024 [arXiv:1502.02638 [hep-ex]].
- [562] R. Aaij *et al.* [LHCb], “Measurement of indirect CP asymmetries in $D^0 \rightarrow K^- K^+$ and $D^0 \rightarrow \pi^- \pi^+$ decays using semileptonic B decays,” JHEP **04** (2015), 043 doi:10.1007/JHEP04(2015)043 [arXiv:1501.06777 [hep-ex]].
- [563] R. Aaij *et al.* [LHCb], “Angular analysis of the $B^0 \rightarrow K^{*0} e^+ e^-$ decay in the low- q^2 region,” JHEP **04** (2015), 064 doi:10.1007/JHEP04(2015)064 [arXiv:1501.03038 [hep-ex]].
- [564] R. Aaij *et al.* [LHCb], “Determination of the branching fractions of $B_S^0 \rightarrow D_S^\mp K^\mp$ and $B^0 \rightarrow D_S^- K^+$,” JHEP **05** (2015), 019 doi:10.1007/JHEP05(2015)019 [arXiv:1412.7654 [hep-ex]].
- [565] R. Aaij *et al.* [LHCb], “Study of the rare B_s^0 and B^0 decays into the $\pi^+ \pi^- \mu^+ \mu^-$ final state,” Phys. Lett. B **743** (2015), 46-55 doi:10.1016/j.physletb.2015.02.010 [arXiv:1412.6433 [hep-ex]].
- [566] R. Aaij *et al.* [LHCb], “LHCb Detector Performance,” Int. J. Mod. Phys. A **30** (2015) no.07, 1530022 doi:10.1142/S0217751X15300227 [arXiv:1412.6352 [hep-ex]].
- [567] R. Aaij *et al.* [LHCb], “Search for long-lived particles decaying to jet pairs,” Eur. Phys. J. C **75** (2015) no.4, 152 doi:10.1140/epjc/s10052-015-3344-6 [arXiv:1412.3021 [hep-ex]].
- [568] R. Aaij *et al.* [LHCb], “Measurement of the inelastic pp cross-section at a centre-of-mass energy of $\sqrt{s} = 7$ TeV,” JHEP **02** (2015), 129 doi:10.1007/JHEP02(2015)129 [arXiv:1412.2500 [hep-ex]].
- [569] R. Aaij *et al.* [LHCb], “Measurement of the lifetime of the B_c^+ meson using the $B_c^+ \rightarrow J/\psi \pi^+$ decay mode,” Phys. Lett. B **742** (2015), 29-37 doi:10.1016/j.physletb.2015.01.010 [arXiv:1411.6899 [hep-ex]].
- [570] R. Aaij *et al.* [LHCb], “Observation of two new Ξ_b^- baryon resonances,” Phys. Rev. Lett. **114** (2015), 062004 doi:10.1103/PhysRevLett.114.062004 [arXiv:1411.4849 [hep-ex]].
- [571] V. Khachatryan *et al.* [CMS and LHCb], “Observation of the rare $B_s^0 \rightarrow \mu^+ \mu^-$ decay from the combined analysis of CMS and LHCb data,” Nature **522** (2015), 68-72 doi:10.1038/nature14474 [arXiv:1411.4413 [hep-ex]].
- [572] R. Aaij *et al.* [LHCb], “Precision measurement of CP violation in $B_s^0 \rightarrow J/\psi K^+ K^-$ decays,” Phys. Rev. Lett. **114** (2015) no.4, 041801 doi:10.1103/PhysRevLett.114.041801 [arXiv:1411.3104 [hep-ex]].
- [573] R. Aaij *et al.* [LHCb], “Measurement of B_c^+ production in proton-proton collisions at $\sqrt{s} = 8$ TeV,” Phys. Rev. Lett. **114** (2015), 132001 doi:10.1103/PhysRevLett.114.132001 [arXiv:1411.2943 [hep-ex]].
- [574] R. Aaij *et al.* [LHCb], “Measurement of the CP -violating phase β in $B^0 \rightarrow J/\psi \pi^+ \pi^-$ decays and limits on penguin effects,” Phys. Lett. B **742** (2015), 38-49 doi:10.1016/j.physletb.2015.01.008 [arXiv:1411.1634 [hep-ex]].

- [575] R. Aaij *et al.* [LHCb], “Measurement of the Z+b-jet cross-section in pp collisions at $\sqrt{s} = 7$ TeV in the forward region,” JHEP **01** (2015), 064 doi:10.1007/JHEP01(2015)064 [arXiv:1411.1264 [hep-ex]].
- [576] R. Aaij *et al.* [LHCb], “Study of $\eta - \eta'$ mixing from measurement of $B_{(s)}^0 \rightarrow J/\psi \eta^{(\prime)}$ decay rates,” JHEP **01** (2015), 024 doi:10.1007/JHEP01(2015)024 [arXiv:1411.0943 [hep-ex]].
- [577] R. Aaij *et al.* [LHCb], “Search for CP violation in $D^0 \rightarrow \pi^- \pi^+ \pi^0$ decays with the energy test,” Phys. Lett. B **740** (2015), 158-167 doi:10.1016/j.physletb.2014.11.043 [arXiv:1410.4170 [hep-ex]].
- [578] R. Aaij *et al.* [LHCb], “Precision luminosity measurements at LHCb,” JINST **9** (2014) no.12, P12005 doi:10.1088/1748-0221/9/12/P12005 [arXiv:1410.0149 [hep-ex]].
- [579] R. Aaij *et al.* [LHCb], “Search for the lepton flavour violating decay $\tau^- \rightarrow \mu^- \mu^+ \mu^-$,” JHEP **02** (2015), 121 doi:10.1007/JHEP02(2015)121 [arXiv:1409.8548 [hep-ex]].
- [580] R. Aaij *et al.* [LHCb], “Precision Measurement of the Mass and Lifetime of the Ξ_b^- Baryon,” Phys. Rev. Lett. **113** (2014) no.24, 242002 doi:10.1103/PhysRevLett.113.242002 [arXiv:1409.8568 [hep-ex]].
- [581] R. Aaij *et al.* [LHCb], “Measurement of the semileptonic CP asymmetry in $B^0 - \bar{B}^0$ mixing,” Phys. Rev. Lett. **114** (2015), 041601 doi:10.1103/PhysRevLett.114.041601 [arXiv:1409.8586 [hep-ex]].
- [582] R. Aaij *et al.* [LHCb], “Measurement of the CP-violating phase ϕ_s in $\bar{B}_s^0 \rightarrow D_s^+ D_s^-$ decays,” Phys. Rev. Lett. **113** (2014) no.21, 211801 doi:10.1103/PhysRevLett.113.211801 [arXiv:1409.4619 [hep-ex]].
- [583] R. Aaij *et al.* [LHCb], “Measurement of the $\eta_c(1S)$ production cross-section in proton-proton collisions via the decay $\eta_c(1S) \rightarrow p\bar{p}$,” Eur. Phys. J. C **75** (2015) no.7, 311 doi:10.1140/epjc/s10052-015-3502-x [arXiv:1409.3612 [hep-ex]].
- [584] R. Aaij *et al.* [LHCb], “Measurement of the $\chi_b(3P)$ mass and of the relative rate of $\chi_{b1}(1P)$ and $\chi_{b2}(1P)$ production,” JHEP **10** (2014), 088 doi:10.1007/JHEP10(2014)088 [arXiv:1409.1408 [hep-ex]].
- [585] R. Aaij *et al.* [LHCb], “Measurements of CP violation in the three-body phase space of charmless B^\pm decays,” Phys. Rev. D **90** (2014) no.11, 112004 doi:10.1103/PhysRevD.90.112004 [arXiv:1408.5373 [hep-ex]].
- [586] R. Aaij *et al.* [LHCb], “Measurement of the forward W boson cross-section in pp collisions at $\sqrt{s} = 7$ TeV,” JHEP **12** (2014), 079 doi:10.1007/JHEP12(2014)079 [arXiv:1408.4354 [hep-ex]].
- [587] R. Aaij *et al.* [LHCb], “Determination of γ and $-2\beta_s$ from charmless two-body decays of beauty mesons,” Phys. Lett. B **741** (2015), 1-11 doi:10.1016/j.physletb.2014.12.015 [arXiv:1408.4368 [hep-ex]].
- [588] R. Aaij *et al.* [LHCb], “Measurement of the CKM angle γ using $B^\pm \rightarrow DK^\pm$ with $D \rightarrow K_S^0 \pi^+ \pi^-, K_S^0 K^+ K^-$ decays,” JHEP **10** (2014), 097 doi:10.1007/JHEP10(2014)097 [arXiv:1408.2748 [hep-ex]].
- [589] R. Aaij *et al.* [LHCb], “Measurement of the track reconstruction efficiency at LHCb,” JINST **10** (2015) no.02, P02007 doi:10.1088/1748-0221/10/02/P02007 [arXiv:1408.1251 [hep-ex]].
- [590] R. Aaij *et al.* [LHCb], “Search for CP violation using T-odd correlations in $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$ decays,” JHEP **10** (2014), 005 doi:10.1007/JHEP10(2014)005 [arXiv:1408.1299 [hep-ex]].
- [591] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetries in the decays $B^0 \rightarrow K^{*0} \mu^+ \mu^-$ and $B^+ \rightarrow K^+ \mu^+ \mu^-$,” JHEP **09** (2014), 177 doi:10.1007/JHEP09(2014)177 [arXiv:1408.0978 [hep-ex]].

- [592] R. Aaij *et al.* [LHCb], “First observation of a baryonic B_c^+ decay,” *Phys. Rev. Lett.* **113** (2014) no.15, 152003 doi:10.1103/PhysRevLett.113.152003 [arXiv:1408.0971 [hep-ex]].
- [593] R. Aaij *et al.* [LHCb], “First observations of the rare decays $B^+ \rightarrow K^+\pi^+\pi^-\mu^+\mu^-$ and $B^+ \rightarrow \phi K^+\mu^+\mu^-$,” *JHEP* **10** (2014), 064 doi:10.1007/JHEP10(2014)064 [arXiv:1408.1137 [hep-ex]].
- [594] R. Aaij *et al.* [LHCb], “Measurement of the $\bar{B}^0 - B^0$ and $\bar{B}_s^0 - B_s^0$ production asymmetries in pp collisions at $\sqrt{s} = 7$ TeV,” *Phys. Lett. B* **739** (2014), 218-228 doi:10.1016/j.physletb.2014.10.005 [arXiv:1408.0275 [hep-ex]].
- [595] R. Aaij *et al.* [LHCb], “Measurement of CP violation parameters in $B^0 \rightarrow DK^{*0}$ decays,” *Phys. Rev. D* **90** (2014) no.11, 112002 doi:10.1103/PhysRevD.90.112002 [arXiv:1407.8136 [hep-ex]].
- [596] R. Aaij *et al.* [LHCb], “Observation of $B_s^0 \rightarrow K^{*\pm}K^\mp$ and evidence for $B_s^0 \rightarrow K^{*-}\pi^+$ decays,” *New J. Phys.* **16** (2014) no.12, 123001 doi:10.1088/1367-2630/16/12/123001 [arXiv:1407.7704 [hep-ex]].
- [597] R. Aaij *et al.* [LHCb], “Study of χ_b meson production in $p p$ collisions at $\sqrt{s} = 7$ and 8 TeV and observation of the decay $\chi_b(3P) \rightarrow \Upsilon(3S)\gamma$,” *Eur. Phys. J. C* **74** (2014) no.10, 3092 doi:10.1140/epjc/s10052-014-3092-z [arXiv:1407.7734 [hep-ex]].
- [598] R. Aaij *et al.* [LHCb], “Dalitz plot analysis of $B_s^0 \rightarrow \bar{D}^0 K^- \pi^+$ decays,” *Phys. Rev. D* **90** (2014) no.7, 072003 doi:10.1103/PhysRevD.90.072003 [arXiv:1407.7712 [hep-ex]].
- [599] R. Aaij *et al.* [LHCb], “Observation of overlapping spin-1 and spin-3 $\bar{D}^0 K^-$ resonances at mass $2.86\text{GeV}/c^2$,” *Phys. Rev. Lett.* **113** (2014), 162001 doi:10.1103/PhysRevLett.113.162001 [arXiv:1407.7574 [hep-ex]].
- [600] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $B_s^0 \rightarrow D_s^\mp K^\pm$ decays,” *JHEP* **11** (2014), 060 doi:10.1007/JHEP11(2014)060 [arXiv:1407.6127 [hep-ex]].
- [601] R. Aaij *et al.* [LHCb], “Measurement of CP violation and constraints on the CKM angle γ in $B^\pm \rightarrow DK^\pm$ with $D \rightarrow K_S^0 \pi^+ \pi^-$ decays,” *Nucl. Phys. B* **888** (2014), 169-193 doi:10.1016/j.nuclphysb.2014.09.015 [arXiv:1407.6211 [hep-ex]].
- [602] R. Aaij *et al.* [LHCb], “Measurement of the \bar{B}_s^0 meson lifetime in $D_s^+ \pi^-$ decays,” *Phys. Rev. Lett.* **113** (2014) no.17, 172001 doi:10.1103/PhysRevLett.113.172001 [arXiv:1407.5873 [hep-ex]].
- [603] R. Aaij *et al.* [LHCb], “Observation of charmonium pairs produced exclusively in pp collisions,” *J. Phys. G* **41** (2014) no.11, 115002 doi:10.1088/0954-3899/41/11/115002 [arXiv:1407.5973 [hep-ex]].
- [604] R. Aaij *et al.* [LHCb], “Evidence for CP Violation in $B^+ \rightarrow p\bar{p}K^+$ Decays,” *Phys. Rev. Lett.* **113** (2014) no.14, 141801 doi:10.1103/PhysRevLett.113.141801 [arXiv:1407.5907 [hep-ex]].
- [605] R. Aaij *et al.* [LHCb], “Measurement of the ratio of B_c^+ branching fractions to $J/\psi\pi^+$ and $J/\psi\mu^+\nu_\mu$,” *Phys. Rev. D* **90** (2014) no.3, 032009 doi:10.1103/PhysRevD.90.032009 [arXiv:1407.2126 [hep-ex]].
- [606] R. Aaij *et al.* [LHCb], “Measurement of CP violation in $B_s^0 \rightarrow \phi\phi$ decays,” *Phys. Rev. D* **90** (2014) no.5, 052011 doi:10.1103/PhysRevD.90.052011 [arXiv:1407.2222 [hep-ex]].
- [607] R. Aaij *et al.* [LHCb], “Effective lifetime measurements in the $B_s^0 \beta K^+ K^-$, $B^0 \beta K^+ \pi^-$ and $B_s^0 \beta \pi^+ K^-$ decays,” *Phys. Lett. B* **736** (2014), 446-454 doi:10.1016/j.physletb.2014.07.051 [arXiv:1406.7204 [hep-ex]].
- [608] R. Aaij *et al.* [LHCb], “Test of lepton universality using $B^+ \rightarrow K^+ \ell^+ \ell^-$ decays,” *Phys. Rev. Lett.* **113** (2014), 151601 doi:10.1103/PhysRevLett.113.151601 [arXiv:1406.6482 [hep-ex]].

- [609] R. Aaij *et al.* [LHCb], “First measurement of the charge asymmetry in beauty-quark pair production,” *Phys. Rev. Lett.* **113** (2014) no.8, 082003 doi:10.1103/PhysRevLett.113.082003 [arXiv:1406.4789 [hep-ex]].
- [610] R. Aaij *et al.* [LHCb], “Observation of Z production in proton-lead collisions at LHCb,” *JHEP* **09** (2014), 030 doi:10.1007/JHEP09(2014)030 [arXiv:1406.2885 [hep-ex]].
- [611] R. Aaij *et al.* [LHCb], “Search for CP violation in $D^\pm \rightarrow K_S^0 K^\pm$ and $D_s^\pm \rightarrow K_S^0 \pi^\pm$ decays,” *JHEP* **10** (2014), 025 doi:10.1007/JHEP10(2014)025 [arXiv:1406.2624 [hep-ex]].
- [612] R. Aaij *et al.* [LHCb], “Observation of the $\Lambda_b^0 \rightarrow J/\psi p \pi^-$ decay,” *JHEP* **07** (2014), 103 doi:10.1007/JHEP07(2014)103 [arXiv:1406.0755 [hep-ex]].
- [613] R. Aaij *et al.* [LHCb], “Precision measurement of the mass and lifetime of the Ξ_b^0 baryon,” *Phys. Rev. Lett.* **113** (2014), 032001 doi:10.1103/PhysRevLett.113.032001 [arXiv:1405.7223 [hep-ex]].
- [614] R. Aaij *et al.* [LHCb], “Study of the kinematic dependences of Λ_b^0 production in pp collisions and a measurement of the $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$ branching fraction,” *JHEP* **08** (2014), 143 doi:10.1007/JHEP08(2014)143 [arXiv:1405.6842 [hep-ex]].
- [615] R. Aaij *et al.* [LHCb], “Study of Υ production and cold nuclear matter effects in p Pb collisions at $\sqrt{s_{NN}}=5$ TeV,” *JHEP* **07** (2014), 094 doi:10.1007/JHEP07(2014)094 [arXiv:1405.5152 [nucl-ex]].
- [616] R. Aaij *et al.* [LHCb], “Measurement of the CP-violating phase ϕ_s in $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$ decays,” *Phys. Lett. B* **736** (2014), 186-195 doi:10.1016/j.physletb.2014.06.079 [arXiv:1405.4140 [hep-ex]].
- [617] R. Aaij *et al.* [LHCb], “Observation of the $B_s^0 \rightarrow J/\psi K_S^0 K^\pm \pi^\mp$ decay,” *JHEP* **07** (2014), 140 doi:10.1007/JHEP07(2014)140 [arXiv:1405.3219 [hep-ex]].
- [618] R. Aaij *et al.* [LHCb], “Measurement of CP asymmetry in $D^0 \rightarrow K^- K^+$ and $D^0 \rightarrow \pi^- \pi^+$ decays,” *JHEP* **07** (2014), 041 doi:10.1007/JHEP07(2014)041 [arXiv:1405.2797 [hep-ex]].
- [619] R. Aaij *et al.* [LHCb], “Measurement of the Ξ_b^- and Ω_b^- baryon lifetimes,” *Phys. Lett. B* **736** (2014), 154-162 doi:10.1016/j.physletb.2014.06.064 [arXiv:1405.1543 [hep-ex]].
- [620] R. Aaij *et al.* [LHCb], “Measurement of the resonant and CP components in $\bar{B}^0 \rightarrow J/\psi \pi^+ \pi^-$ decays,” *Phys. Rev. D* **90** (2014) no.1, 012003 doi:10.1103/PhysRevD.90.012003 [arXiv:1404.5673 [hep-ex]].
- [621] R. Aaij *et al.* [LHCb], “Observation of the resonant character of the $Z(4430)^-$ state,” *Phys. Rev. Lett.* **112** (2014) no.22, 222002 doi:10.1103/PhysRevLett.112.222002 [arXiv:1404.1903 [hep-ex]].
- [622] R. Aaij *et al.* [LHCb], “Evidence for the decay $X(3872) \rightarrow \psi(2S)\gamma$,” *Nucl. Phys. B* **886** (2014), 665-680 doi:10.1016/j.nuclphysb.2014.06.011 [arXiv:1404.0275 [hep-ex]].
- [623] R. Aaij *et al.* [LHCb], “Angular analysis of charged and neutral $B \rightarrow K \mu^+ \mu^-$ decays,” *JHEP* **05** (2014), 082 doi:10.1007/JHEP05(2014)082 [arXiv:1403.8045 [hep-ex]].
- [624] R. Aaij *et al.* [LHCb], “Differential branching fractions and isospin asymmetries of $B \rightarrow K^{(*)} \mu^+ \mu^-$ decays,” *JHEP* **06** (2014), 133 doi:10.1007/JHEP06(2014)133 [arXiv:1403.8044 [hep-ex]].
- [625] R. Aaij *et al.* [LHCb], “Study of beauty hadron decays into pairs of charm hadrons,” *Phys. Rev. Lett.* **112** (2014), 202001 doi:10.1103/PhysRevLett.112.202001 [arXiv:1403.3606 [hep-ex]].
- [626] R. Aaij *et al.* [LHCb], “Measurement of polarization amplitudes and CP asymmetries in $B^0 \rightarrow \phi K^*(892)^0$,” *JHEP* **05** (2014), 069 doi:10.1007/JHEP05(2014)069 [arXiv:1403.2888 [hep-ex]].
- [627] R. Aaij *et al.* [LHCb], “Measurement of $\psi(2S)$ polarisation in pp collisions at $\sqrt{s} = 7$ TeV,” *Eur. Phys. J. C* **74** (2014) no.5, 2872 doi:10.1140/epjc/s10052-014-2872-9 [arXiv:1403.1339 [hep-ex]].

I declare that all information above are true.

Date: 10/12/2025

Signature:

Lupato Anne