



CERN-EP-20XX-YYY  
LHCb-PAPER-20XX-YYY  
August 16, 2016

# Template for writing LHCb papers

The LHCb collaboration<sup>†</sup>

## Abstract

Guidelines for the preparation of LHCb documents are given. This is a “living” document that should reflect our current practice. It is expected that these guidelines are implemented for papers before they go into the first collaboration wide review. Please contact the Editorial Board chair if you have suggestions for modifications. This is the title page for journal publications (PAPER). For a CONF note or ANA note, switch to the appropriate template by uncommenting the corresponding line in the file `main.tex`.

Submitted to JHEP / Phys. Rev. D / Phys. Rev. Lett. / Phys. Lett. B / Eur. Phys. J. C  
/ Nucl. Phys. B

© CERN on behalf of the LHCb collaboration, licence CC-BY-4.0.

---

<sup>†</sup>Authors are listed at the end of this paper.



# 1 Introduction

This is the template for typesetting LHCb notes and journal papers. It should be used for any document in LHCb [1] that is to be publicly available. The format should be used for uploading to preprint servers and only afterwards should specific typesetting required for journals or conference proceedings be applied. The main Latex file contains several options as described in the Latex comment lines.

It is expected that these guidelines are implemented for papers already before they go into the first collaboration wide review.

This template also contains the guidelines for how publications and conference reports should be written. The symbols defined in `lhcb-symbols-def.tex` are compatible with LHCb guidelines.

The front page should be adjusted according to what is written. Default versions are available for papers, conference reports and analysis notes. Just comment out what you require in the `main.tex` file.

This directory contains a file called `Makefile`. Typing `make` will apply all Latex and Bibtex commands in the correct order to produce a pdf file of the document. The default Latex compiler is `pdflatex`, which requires figures to be in pdf format. To change to plain Latex, edit line 9 of `Makefile`. Typing `make clean` will remove all temporary files generated by `(pdf)latex`.

There is also a PRL template, which is called `main-prl.tex`. You need to have REVTeX 4.1 installed [2] to compile this. Typing `make prl` produces a PRL-style PDF file. Note that this version is not meant for LHCb-wide circulation, nor for submission to the arXiv. It is just available to have a look-and-feel of the final PRL version. Typing `make count` will count the words in the main body.

## 2 General principles

The main goal is for a paper to be clear. It should be as brief as possible, without sacrificing clarity. For all public documents, special consideration should be given to the fact that the reader will be less familiar with LHCb than the author.

Here follow a list of general principles that should be adhered to:

1. Choices that are made concerning layout and typography should be consistently applied throughout the document.
2. Standard English should be used (British rather than American) for LHCb notes and preprints. Examples: colour, flavour, centre, metre, modelled and aluminium. Words ending on -ise or -isation (polarise, hadronisation) can be written with -ize or -ization ending. The punctuation normally follows the closing quote mark of quoted text, rather than being included before the closing quote. Footnotes come after punctuation. Papers to be submitted to an American journal can be written in American English instead. Under no circumstance should the two be mixed.
3. Use of jargon should be avoided where possible. “Systematics” are “systematic uncertainties”, “L0” is “hardware trigger”, “penguin” diagrams are best introduced with an expression like “electroweak loop (penguin) diagrams”.

4. Avoid using quantities that are internal jargon and/or are impossible to reproduce without the full simulation: instead of ‘It is required that  $\chi^2_{\text{vtx}} < 3$ ’, say ‘A good quality vertex is required’; instead of ‘It is required that  $\chi^2_{\text{IP}} > 16$ ’, say ‘The track is inconsistent with originating from a PV’; instead of ‘A DLL greater than 20 is required’ say ‘Tracks are required to be identified as kaons’.
5. Latex should be used for typesetting. Line numbering should be switched on for drafts that are circulated for comments.
6. The abstract should be concise, and not include citations or numbered equations, and should give the key results from the paper.
7. Apart from descriptions of the detector, the trigger and the simulation, the text should not be cut-and-pasted from other sources that have previously been published.
8. References should usually be made only to publicly accessible documents. References to LHCb conference reports and public notes should be avoided in journal publications, instead including the relevant material in the paper itself.
9. The use of tenses should be consistent. It is recommended to mainly stay in the present tense, for the abstract, the description of the analysis, *etc.*; the past tense is then used where necessary, for example when describing the data taking conditions.
10. It is recommended to use the passive rather than active voice: “the mass is measured”, rather than “we measure the mass”. Limited use of the active voice is acceptable, in situations where re-writing in the passive form would be cumbersome, such as for the acknowledgements. Some leeway is permitted to accommodate different author’s styles, but “we” should not appear excessively in the abstract or the first lines of introduction or conclusion.
11. A sentence should not start with a variable, a particle or an acronym. A title or caption should not start with an article.
12. Incorrect punctuation around conjunctive adverbs and the use of dangling modifiers are the two most common mistakes of English grammar in LHCb draft papers. If in doubt, read the wikipedia articles on conjunctive adverb and dangling modifier.

### 3 Layout

1. Unnecessary blank space should be avoided, between paragraphs or around figures and tables.
2. Figure and table captions should be concise and use a somewhat smaller typeface than the main text, to help distinguish them. This is achieved by inserting `\small` at the beginning of the caption. (NB with the latest version of the file `preamble.tex` this is automatic) Figure captions go below the figure, table captions go above the table.

3. Captions and footnotes should be punctuated correctly, like normal text. The use of too many footnotes should be avoided: typically they are used for giving commercial details of companies, or standard items like coordinate system definition or the implicit inclusion of charge-conjugate processes.<sup>1,2</sup>

4. Tables should be formatted in a simple fashion, without excessive use of horizontal and vertical lines. See Table 1 for an example.

5. Figures and tables should normally be placed so that they appear on the same page as their first reference, but at the top or bottom of the page; if this is not possible, they should come as soon as possible afterwards. They must all be referred to from the text.

6. If one or more equations are referenced, all equations should be numbered using parentheses as shown in Eq. 1,

$$V_{us}V_{ub}^* + V_{cs}V_{cb}^* + V_{ts}V_{tb}^* = 0 . \quad (1)$$

7. Displayed results like

$$\mathcal{B}(B_s^0 \rightarrow \mu^+ \mu^-) < 1.5 \times 10^{-8} \text{ at 95\% CL}$$

should in general not be numbered.

8. Numbered equations should be avoided in captions and footnotes.

9. Displayed equations are part of the normal grammar of the text. This means that the equation should end in full stop or comma if required when reading aloud. The line after the equation should only be indented if it starts a new paragraph.

10. Sub-sectioning should not be excessive: sections with more than three levels of index (1.1.1) should be avoided.

11. Acronyms should be defined the first time they are used, *e.g.* “Monte Carlo (MC) events containing a doubly Cabibbo-suppressed (DCS) decay have been generated.” The abbreviated words should not be capitalised if it is not naturally written with capitals, *e.g.* quantum chromodynamics (QCD), impact parameter (IP), boosted decision tree (BDT). Avoid acronyms if they are used three times or less. A sentence should never start with an acronym and its better to avoid it as the last word of a sentence as well.

---

<sup>1</sup>If placed at the end of a sentence, the footnote symbol normally follows the punctuation; if placed in the middle of an equation, take care to avoid any possible confusion with an index.

<sup>2</sup>The standard footnote reads: “The inclusion of charge-conjugate processes is implied throughout.” This may need to be modified, for example with “except in the discussion of asymmetries.”

Table 1: Background-to-signal ratio estimated in a  $\pm 50 \text{ MeV}/c^2$  mass window for the prompt and long-lived backgrounds, and the minimum bias rate.

Channel	$B_{\text{pr}}/S$	$B_{\text{LL}}/S$	MB rate
$B_s^0 \rightarrow J/\psi \phi$	$1.6 \pm 0.6$	$0.51 \pm 0.08$	$\sim 0.3 \text{ Hz}$
$B^0 \rightarrow J/\psi K^{*0}$	$5.2 \pm 0.3$	$1.53 \pm 0.08$	$\sim 8.1 \text{ Hz}$
$B^+ \rightarrow J/\psi K^{*+}$	$1.6 \pm 0.2$	$0.29 \pm 0.06$	$\sim 1.4 \text{ Hz}$

## 4 Typography

The use of the Latex typesetting symbols defined in the file `lhcb-symbols-def.tex` and detailed in the appendices of this document is strongly encouraged as it will make it much easier to follow the recommendation set out below.

1. LHCb is typeset with a normal (roman) lowercase b.
2. Titles are in bold face, and usually only the first word is capitalised.
3. Mathematical symbols and particle names should also be typeset in bold when appearing in titles.
4. Units are in roman type, except for constants such as  $c$  or  $h$  that are italic: GeV,  $\text{GeV}/c^2$ . The unit should be separated from the value with a thin space (“\,”), and they should not be broken over two lines. Correct spacing is automatic when using predefined units inside math mode:  $\$3.0\backslash\text{gev}\$ \rightarrow 3.0 \text{ GeV}$ . Spacing goes wrong when using predefined units outside math mode AND forcing extra space:  $3.0\backslash,\backslash\text{gev} \rightarrow 3.0 \text{ GeV}$  or worse:  $3.0\backslash\sim\backslash\text{gev} \rightarrow 3.0 \text{ GeV}$ .
5. If factors of  $c$  are kept, they should be used both for masses and momenta, *e.g.*  $p = 5.2 \text{ GeV}/c$  (or  $\text{GeV}c^{-1}$ ),  $m = 3.1 \text{ GeV}/c^2$  (or  $\text{GeV}c^{-2}$ ). If they are dropped this should be done consistently throughout, and a note should be added at the first instance to indicate that units are taken with  $c = 1$ .
6. The % sign should not be separated from the number that precedes it: 5%, not 5 %. A thin space is also acceptable: 5 %, but should be applied consistently throughout the paper.
7. Ranges should be formatted consistently. The recommendend form is to use a dash with no spacing around it: 7–8 GeV, obtained as  $7\text{--}8\backslash\text{gev}$ .
8. Italic is preferred for particle names (although roman is acceptable, if applied consistently throughout). Particle Data Group conventions should generally be followed:  $B^0$  (no need for a “d” subscript),  $B_s^0 \rightarrow J/\psi \phi$ ,  $\bar{B}_s^0$ , (note the long bar, obtained with `\overline`, in contrast to the discouraged short `\bar` resulting in  $\bar{B}$ ),  $K_s^0$  (note the uppercase roman type “S”). This is most easily achieved by using the predefined symbols described in Appendix C. Unless there is a good reason not to, the charge of a particle should be specified if there is any possible ambiguity ( $m(K^+K^-)$  instead of  $m(KK)$ , which could refer to neutral kaons).

9. Decay chains can be written in several ways, depending on the complexity and the number of times it occurs. Unless there is a good reason not to, usage of a particular type should be consistent within the paper. Examples are:  $D_s^+ \rightarrow \phi\pi^+$ , with  $\phi \rightarrow K^+K^-$ ;  $D_s^+ \rightarrow \phi\pi^+$  ( $\phi \rightarrow K^+K^-$ );  $D_s^+ \rightarrow \phi(\rightarrow K^+K^-)\pi^+$ ; or  $D_s^+ \rightarrow [K^+K^-]_\phi\pi^+$ .
10. Variables are usually italic:  $V$  is a voltage (variable), while 1 V is a volt (unit). Also in combined expressions:  $Q$ -value,  $z$ -scale,  $R$ -parity *etc.*
11. Subscripts and superscripts are roman type when they refer to a word (such as T for transverse) and italic when they refer to a variable (such as  $t$  for time):  $p_T$ ,  $\Delta m_s$ ,  $t_{\text{rec}}$ .
12. Standard function names are in roman type: *e.g.* cos, sin and exp.
13. Figure, Section, Equation, Chapter and Reference should be abbreviated as Fig., Sect. (or alternatively Sec.), Eq., Chap. and Ref. respectively, when they refer to a particular (numbered) item, except when they start a sentence. Table and Appendix are not abbreviated. The plural form of abbreviation keeps the point after the s, *e.g.* Figs. 1 and 2. Equations may be referred to either with (“Eq. (1)”) or without (“Eq. 1”) parentheses, but it should be consistent within the paper.
14. Common abbreviations derived from Latin such as “for example” (*e.g.*), “in other words” (*i.e.*), “and so forth” (*etc.*), “and others” (*et al.*), “versus” (*vs.*) can be used, with the typography shown, but not excessively; other more esoteric abbreviations should be avoided.
15. Units, material and particle names are usually lower case if spelled out, but often capitalised if abbreviated: amps (A), gauss (G), lead (Pb), silicon (Si), kaon ( $K$ ), but proton ( $p$ ).
16. Counting numbers are usually written in words if they start a sentence or if they have a value of ten or below in descriptive text (*i.e.* not including figure numbers such as “Fig. 4”, or values followed by a unit such as “4 cm”). The word ‘unity’ can be useful to express the special meaning of the number one in expressions such as: “The BDT output takes values between zero and unity”.
17. Numbers larger than 9999 have a comma (or a small space, but not both) between the multiples of thousand: *e.g.* 10,000 or 12,345,678. The decimal point is indicated with a point rather than a comma: *e.g.* 3.141.
18. We apply the rounding rules of the PDG [3]. The basic rule states that if the three highest order digits of the uncertainty lie between 100 and 354, we round to two significant digits. If they lie between 355 and 949, we round to one significant digit. Finally, if they lie between 950 and 999, we round up and keep two significant digits. In all cases, the central value is given with a precision that matches that of the uncertainty. So, for example, the result  $0.827 \pm 0.119$  should be written as  $0.83 \pm 0.12$ ,  $0.827 \pm 0.367$  should turn into  $0.8 \pm 0.4$ , and  $14.674 \pm 0.964$  becomes  $14.7 \pm 1.0$ . When writing numbers with uncertainty components from different sources, *i.e.* statistical and systematic uncertainties, the rule applies to the uncertainty with the best precision, so  $0.827 \pm 0.367$  (stat)  $\pm 0.179$  (syst) goes to  $0.83 \pm 0.37$  (stat)  $\pm 0.18$  (syst) and  $8.943 \pm 0.123$  (stat)  $\pm 0.995$  (syst) goes to  $8.94 \pm 0.12$  (stat)  $\pm 1.00$  (syst).

- 178 19. When rounding numbers, it should be avoided to pad with zeroes at the end. So  
179  $51237 \pm 4561$  should be rounded as  $(5.12 \pm 0.46) \times 10^4$  and not  $51200 \pm 4600$ .
- 180 20. When rounding numbers in a table, some variation of the rounding rules above may  
181 be required to achieve uniformity.
- 182 21. Hyphenation should be used where necessary to avoid ambiguity, but not excessively.  
183 For example: “big-toothed fish” (to indicate that big refers to the teeth, not to  
184 the fish), but “big white fish”. A compound modifier often requires hyphenation  
185 (*CP*-violating observables, *b*-hadron decays, final-state radiation, second-order poly-  
186 nomial), even if the same combination in an adjective-noun combination does not  
187 (direct *CP* violation, heavy *b* hadrons, charmless final state). Adverb-adjective  
188 combinations are not hyphenated if the adverb ends with ‘ly’: oppositely charged  
189 pions, kinematically similar decay. Cross-section, cross-check, and two-dimensional  
190 are hyphenated. Semileptonic, pseudorapidity, pseudoexperiment, multivariate,  
191 multidimensional, reweighted, preselection, nonresonant, nonzero, nonparametric,  
192 nonrelativistic, misreconstructed and misidentified are single words and should not  
193 be hyphenated.
- 194 22. Minus signs should be in a proper font ( $-$ ), not just hyphens ( $-$ ); this applies to  
195 figure labels as well as the body of the text. In Latex, use math mode (between  
196  $\$$ ’s) or make a dash (“--”). In ROOT, use `#font[122]{-}` to get a normal-sized  
197 minus sign.
- 198 23. Inverted commas (around a title, for example) should be a matching set of left- and  
199 right-handed pairs: “Title”. The use of these should be avoided where possible.
- 200 24. Single symbols are preferred for variables in equations, *e.g.*  $\mathcal{B}$  rather than BF for a  
201 branching fraction.
- 202 25. Parentheses are not usually required around a value and its uncertainty, before  
203 the unit, unless there is possible ambiguity: so  $\Delta m_s = 20 \pm 2 \text{ ps}^{-1}$  does not need  
204 parentheses, whereas  $f_d = (40 \pm 4)\%$  or  $x = (1.7 \pm 0.3) \times 10^{-6}$  does. The unit does  
205 not need to be repeated in expressions like  $1.2 < E < 2.4 \text{ GeV}$ .
- 206 26. The same number of decimal places should be given for all values in any one  
207 expression (*e.g.*  $5.20 < m_B < 5.34 \text{ GeV}/c^2$ ).
- 208 27. Apostrophes are best avoided for abbreviations: if the abbreviated term is capitalised  
209 or otherwise easily identified then the plural can simply add an s, otherwise it is  
210 best to rephrase: *e.g.* HPDs,  $\pi^0$ s, pions, rather than HPD’s,  $\pi^0$ ’s,  $\pi$ s.
- 211 28. Particle labels, decay descriptors and mathematical functions are not nouns, and  
212 need often to be followed by a noun. Thus “background from  $B^0 \rightarrow \pi^+ \pi^-$  decays”  
213 instead of “background from  $B^0 \rightarrow \pi^+ \pi^-$ ”, and “the width of the Gaussian function”  
214 instead of “the width of the Gaussian”.
- 215 29. In equations with multidimensional integrations or differentiations, the differential  
216 terms should be separated by a thin space. Thus  $\int f(x, y) dx dy$  instead of  $\int f(x, y) dx dy$   
217 and  $\frac{d^2 \Gamma}{dx dQ^2}$  instead of  $\frac{d^2 \Gamma}{dx dQ^2}$ . The d’s are allowed in either roman or italic font, but  
218 should be consistent throughout the paper.



## 5 Detector and simulation

The paragraph below can be used for the detector description. Modifications may be required in specific papers to fit within page limits, to enhance particular detector elements or to introduce acronyms used later in the text. For journals where strict word counts are applied (for example, PRL), and space is at a premium, it may be sufficient to write, as a minimum: “The LHCb detector is a single-arm forward spectrometer covering the pseudorapidity range  $2 < \eta < 5$ , described in detail in Refs. [1, 4]”. A slightly longer version could specify the most relevant sub-detectors, *e.g.* “The LHCb detector [1, 4] is a single-arm forward spectrometer covering the pseudorapidity range  $2 < \eta < 5$ , designed for the study of particles containing b or c quarks. The detector elements that are particularly relevant to this analysis are: a silicon-strip vertex detector surrounding the pp interaction region that allows c- and b-hadrons to be identified from their characteristically long flight distance; a tracking system that provides a measurement of momentum,  $p$ , of charged particles; and two ring-imaging Cherenkov detectors that are able to discriminate between different species of charged hadrons.”

In the following paragraph, references to the individual detector performance papers are marked with a \* and should only be included if the analysis relies on numbers or methods described in the specific papers. Otherwise, a reference to the overall detector performance paper~\cite{LHCb-DP-2014-002} will suffice. Note also that the text defines the acronyms for primary vertex, PV, and impact parameter, IP. Remove either of those in case it is not used later on.

The LHCb detector [1, 4] is a single-arm forward spectrometer covering the pseudorapidity range  $2 < \eta < 5$ , designed for the study of particles containing  $b$  or  $c$  quarks. The detector includes a high-precision tracking system consisting of a silicon-strip vertex detector surrounding the  $pp$  interaction region [5]\*, a large-area silicon-strip detector located upstream of a dipole magnet with a bending power of about 4 Tm, and three stations of silicon-strip detectors and straw drift tubes [6]\* placed downstream of the magnet. The tracking system provides a measurement of momentum,  $p$ , of charged particles with a relative uncertainty that varies from 0.5% at low momentum to 1.0% at 200 GeV/ $c$ . The minimum distance of a track to a primary vertex (PV), the impact parameter (IP), is measured with a resolution of  $(15 + 29/p_T) \mu\text{m}$ , where  $p_T$  is the component of the momentum transverse to the beam, in GeV/ $c$ . Different types of charged hadrons are distinguished using information from two ring-imaging Cherenkov detectors [7]\*. Photons, electrons and hadrons are identified by a calorimeter system consisting of scintillating-pad and preshower detectors, an electromagnetic calorimeter and a hadronic calorimeter. Muons are identified by a system composed of alternating layers of iron and multiwire proportional chambers [8]\*. The online event selection is performed by a trigger [9]\*, which consists of a hardware stage, based on information from the calorimeter and muon systems, followed by a software stage, which applies a full event reconstruction.

A more detailed description of the ‘full event reconstruction’ could be:

- The trigger [9]\* consists of a hardware stage, based on information from the calorimeter and muon systems, followed by a software stage, in which all charged particles with  $p_T > 500$  (300) MeV are reconstructed for 2011 (2012) data. For triggers that

require neutral particles, energy deposits in the electromagnetic calorimeter are analysed to reconstruct  $\pi^0$  and  $\gamma$  candidates.

The trigger description has to be specific for the analysis in question. In general, you should not attempt to describe the full trigger system. Below are a few variations that inspiration can be taken from. First from a hadronic analysis, and second from an analysis with muons in the final state. In case you have to look up specifics of a certain trigger, a detailed description of the trigger conditions for Run 1 is available in Ref. [10]. **Never cite this note in a PAPER or CONF-note.**

- At the hardware trigger stage, events are required to have a muon with high  $p_T$  or a hadron, photon or electron with high transverse energy in the calorimeters. For hadrons, the transverse energy threshold is 3.5 GeV. The software trigger requires a two-, three- or four-track secondary vertex with a significant displacement from the primary  $pp$  interaction vertices. At least one charged particle must have a transverse momentum  $p_T > 1.7$  GeV/ $c$  and be inconsistent with originating from a PV. A multivariate algorithm [11] is used for the identification of secondary vertices consistent with the decay of a  $b$  hadron.
- The  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  signal candidates are first required to pass the hardware trigger, which selects events containing at least one muon with transverse momentum  $p_T > 1.48$  GeV/ $c$  in the 7 TeV data or  $p_T > 1.76$  GeV/ $c$  in the 8 TeV data. In the subsequent software trigger, at least one of the final-state particles is required to have  $p_T > 1.7$  GeV/ $c$  in the 7 TeV data or  $p_T > 1.6$  GeV/ $c$  in the 8 TeV data, unless the particle is identified as a muon in which case  $p_T > 1.0$  GeV/ $c$  is required. The final-state particles that satisfy these transverse momentum criteria are also required to have an impact parameter larger than 100  $\mu\text{m}$  with respect to all PVs in the event. Finally, the tracks of two or more of the final-state particles are required to form a vertex that is significantly displaced from the PVs.”

An example to describe the use of both TOS and TIS events:

- In the offline selection, trigger signals are associated with reconstructed particles. Selection requirements can therefore be made on the trigger selection itself and on whether the decision was due to the signal candidate, other particles produced in the  $pp$  collision, or a combination of both.

A good example of a description of long and downstream  $K_s^0$  is given in Ref. [12]:

- Decays of  $K_s^0 \rightarrow \pi^+ \pi^-$  are reconstructed in two different categories: the first involving  $K_s^0$  mesons that decay early enough for the daughter pions to be reconstructed in the vertex detector; and the second containing  $K_s^0$  that decay later such that track segments of the pions cannot be formed in the vertex detector. These categories are referred to as *long* and *downstream*, respectively. The long category has better mass, momentum and vertex resolution than the downstream category.

The description of our software stack for simulation is often causing trouble. The following paragraph can act as inspiration but with variations according to the level of detail required and if mentioning of *e.g.* PHOTOS is required.

- In the simulation,  $pp$  collisions are generated using PYTHIA [13] (In case only PYTHIA 6 is used, remove `*Sjostrand:2007gs` from this citation; if only PYTHIA 8 is used, then reverse the order of the papers in the citation.) with a specific LHCb configuration [14]. Decays of hadronic particles are described by EVTGEN [15], in which final-state radiation is generated using PHOTOS [16]. The interaction of the generated particles with the detector, and its response, are implemented using the GEANT4 toolkit [17] as described in Ref. [18].

Many analyses depend on boosted decision trees. It is inappropriate to use TMVA as the reference as that is merely an implementation of the BDT algorithm. Rather it is suggested to write

In this paper we use a boosted decision tree (BDT) [19, 20] to separate signal from background.

When describing the integrated luminosity of the data set, do not use expressions like “ $1.0 \text{ fb}^{-1}$  of data”, but *e.g.* “data corresponding to an integrated luminosity of  $1.0 \text{ fb}^{-1}$ ”, or “data obtained from  $3 \text{ fb}^{-1}$  of integrated luminosity”.

For analyses where the periodical reversal of the magnetic field is crucial, *e.g.* in measurements of direct  $CP$  violation, the following description can be used as an example phrase: “The polarity of the dipole magnet is reversed periodically throughout data-taking. The configuration with the magnetic field vertically upwards, *MagUp* (downwards, *MagDown*), bends positively (negatively) charged particles in the horizontal plane towards the centre of the LHC.” Only use the *MagUp*, *MagDown* symbols if they are used extensively in tables or figures.

## 6 Figures

A standard LHCb style file for use in production of figures in ROOT is in the URANIA package `RootTools/LHCbStyle` or directly in SVN at `svn+ssh://svn.cern.ch/repos/lhcb/Urania/trunk/RootTools/LHCbStyle`. It is not mandatory to use this style, but it makes it easier to follow the recommendations below.

Figure 1 shows an example of how to include an eps or pdf figure with the `\includegraphics` command (eps figures will not work with `pdflatex`). Note that if the graphics sits in `figs/myfig.pdf`, you can just write `\includegraphics{myfig}` as the `figs` subdirectory is searched automatically and the extension `.pdf` (`.eps`) is automatically added for `pdflatex` (`latex`).

1. Figures should be legible at the size they will appear in the publication, with suitable line width. Their axes should be labelled, and have suitable units (e.g. avoid a mass plot with labels in  $\text{MeV}/c^2$  if the region of interest covers a few  $\text{GeV}/c^2$  and all the numbers then run together). Spurious background shading and boxes around text should be avoided.
2. For the  $y$ -axis, “Entries” or “Candidates” is appropriate in case no background subtraction has been applied. Otherwise “Yield” or “Decays” may be more appropriate. If the unit on the  $y$ -axis corresponds to the yield per bin, indicate so, for example “Entries / (  $5 \text{ MeV}/c^2$ )” or “Entries per  $5 \text{ MeV}/c^2$ ”.

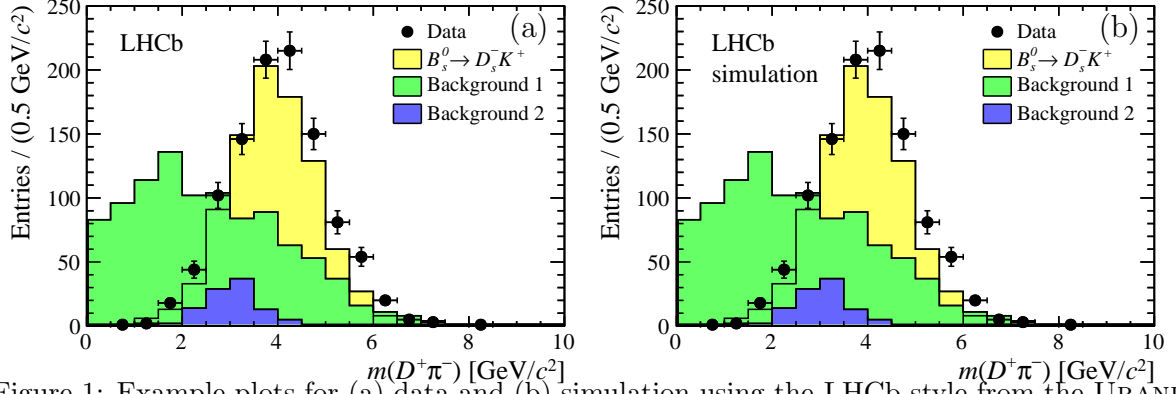


Figure 1: Example plots for (a) data and (b) simulation using the LHCb style from the URANIA package `RootTools/LHCbStyle`. The signal data is shown as points with the signal component as yellow (light shaded), background 1 as green (medium shaded) and background 2 as blue (dark shaded).

3. Fit curves should not obscure the data points, and data points are best (re)drawn over the fit curves.
4. Colour may be used in figures, but the distinction between differently coloured areas or lines should be clear also when the document is printed in black and white, for example through differently dashed lines. The LHCb style mentioned above implements a colour scheme that works well but individual adjustments might be required.
5. Using different hatching styles helps to distinguished filled areas, also in black and white prints. Hatching styles 3001-3025 should be avoided since they behave unpredictably under zooming and scaling. Good styles for “falling hatched” and “rising hatched” are 3345 and 3354.
6. Figures with more than one part should have the parts labelled (a), (b) *etc.*, with a corresponding description in the caption; alternatively they should be clearly referred to by their position, e.g. Fig. 1 (left). In the caption, the labels (a), (b) *etc.* should precede their description. When referencing specific sub-figures, use “see Fig. 1(a)” or “see Figs. 2(b)-(e)”.
7. All figures containing LHCb data should have LHCb written on them. For preliminary results, that should be replaced by “LHCb preliminary”. Figures that only have simulated data should display “LHCb simulation”. Figures that do not depend on LHCb-specific software (*e.g.* only on PYTHIA) should not have any label.

## 7 References

References should be made using Bib<sub>T</sub>EX [21]. A special style `LHCb.bst` has been created to achieve a uniform style. Independent of the journal the paper is submitted to, the preprint should be created using this style. Where arXiv numbers exist, these should be added even for published articles. In the PDF file, hyperlinks will be created to both the arXiv and the published version.

1. Citations are marked using square brackets, and the corresponding references should be typeset using BibTeX and the official LHCb BibTeX style. An example is in Ref. [13].
2. For references with four or less authors all of the authors' names are listed [22], otherwise the first author is given, followed by *et al.*. The LHCb BibTeX style will take care of this.
3. The order of references should be sequential when reading the document. This is automatic when using BibTeX.
4. The titles of papers should in general be included. To remove them, change `\setboolean{articletitles}{false}` to `true` at the top of this template. Note that the titles in `LHCb-PAPER.bib` are in plain LaTeX, in order to correspond to the actual title on the arXiv record. Some differences in style can thus be noticed with respect to the main text, for example particle names that use capital Greek letters are not slanted in the reference titles ( $\Lambda$  vs  $\Lambda$ ).
5. Whenever possible, use references from the supplied files `main.bib`, `LHCb-PAPER.bib`, `LHCb-CONF.bib`, and `LHCb-DP.bib`. These are kept up-to-date by the EB. If you see a mistake, do not edit these files, but let the EB know. This way, for every update of the paper, you save yourself the work of updating the references. Instead, you can just copy or check in the latest versions of the `.bib` files from the repository.
6. For those references not provided by the EB, the best is to copy the BibTeX entry directly from *Inspire*. Often these need to be edited to get the correct title, author names and formatting. For authors with multiple initials, add a space between them (change `R.G.C.` to `R. G. C.`), otherwise only the first initial will be taken. Also, make sure to eliminate unnecessary capitalisation. Apart from that, the title should be respected as much as possible (*e.g.* do not change particle names to PDG convention nor introduce/remove factors of  $c$ ). Check that both the arXiv and the journal index are clickable and point to the right article.
7. The `mciteplus` [23] package is used to enable multiple references to show up as a single item in the reference list. As an example `\cite{Mohapatra:1979ia,*Pascoli:2007qh}` where the `*` indicates that the reference should be merged with the previous one. The result of this can be seen in Ref. [24]. Be aware that the `mciteplus` package should be included as the very last item before the `\begin{document}` to work correctly.
8. It should be avoided to make references to public notes and conference reports in public documents. Exceptions can be discussed on a case-by-case basis with the review committee for the analysis. In internal reports they are of course welcome and can be referenced as seen in Ref. [25] using the `lhcbreport` category. For conference reports, omit the author field completely in the BibTeX record.
9. To get the typesetting and hyperlinks correct for LHCb reports, the category `lhcbreport` should be used in the BibTeX file. See Refs. [26] for some examples. It can be used for LHCb documents in the series `CONF`, `PAPER`, `PROC`, `THESIS`, `LHCC`, `TDR` and internal LHCb reports. Papers sent for publication, but not published yet,

should be referred with their `arXiv` number, so the `PAPER` category should only be used in the rare case of a forward reference to a paper.

10. Proceedings can be used for references to items such as the LHCb simulation [18], where we do not yet have a published paper.

There is a set of standard references to be used in LHCb that are listed in Appendix A.

## 8 Inclusion of supplementary material

Three types of supplementary material should be distinguished:

- A regular appendix: lengthy equations or long tables are sometimes better put in an appendix in order not to interrupt the main flow of a paper. Appendices will appear in the final paper, on arXiv and on the cds record and should be considered integral part of a paper, and are thus to be reviewed like the rest of the paper. An example of an LHCb paper with an appendix is Ref. [27].
- Supplementary material for cds: plots or tables that would make the paper exceed the page limit or are not appropriate to include in the paper itself, but are desirable to be shown in public should be added to the paper drafts in an appendix, and removed from the paper before submitting to arXiv or the journal. See Appendix ?? for further instructions. Examples are: comparison plots of the new result with older results, plots that illustrate cross-checks. An example of an LHCb paper with supplementary material for cds is Ref. [28]. Supplementary material for cds cannot be referenced in the paper. Supplementary material should be included in the draft paper to be reviewed by the collaboration.
- Supplementary material for the paper. This is usually called “supplemental material”, which distinguishes it from supplementary material for cds only. Most journals allow to submit files along with the paper that will not be part of the text of the article, but will be stored on the journal server. Examples are plain text files with numerical data corresponding to the plots in the paper. The supplemental material should be cited in the paper by including a reference which should say “See supplemental material at [link] for [give brief description of material].” The journal will insert a specific link for [link]. The arXiv version will usually include the supplemental material as part of the paper and so should not contain the words “at [link]”. Supplemental material should be included in the draft paper to be reviewed by the collaboration. An example of an LHCb paper with supplemental material is Ref. [29]

## Appendices

### A Standard References

Below is a list of common references, as well as a list of all LHCb publications. As they are already in prepared bib files, they can be used as simply as `\cite{Alves:2008zz}` to get the LHCb detector paper. The references are defined in the files `main.bib`, `LHCb-PAPER.bib`, `LHCb-CONF.bib`, `LHCb-DP.bib` `LHCb-TDR.bib` files, with obvious contents. Each of these have their LHCb-ZZZ-20XX-0YY number as their cite code. If you believe there is a problem with the formatting or content of one of the entries, then get in contact with the Editorial Board rather than just editing it in your local file, since you are likely to need the latest version just before submitting the article.

Description	cite code	Reference
LHCb detector	Alves:2008zz	[1]
LHCb simulation	LHCb-PROC-2011-006	[18]
PDG 2014	PDG2014	[3]
HFAG	HFAG	[30]
PYTHIA	Sjostrand:2006za, *Sjostrand:2007gs	[13]
LHCb PYTHIA tuning	LHCb-PROC-2010-056	[14]
GEANT4	Allison:2006ve, *Agostinelli:2002hh	[17]
EVTGEN	Lange:2001uf	[15]
PHOTOS	Golonka:2005pn	[16]
DIRAC	Tsaregorodtsev:2010zz, *BelleDIRACAmazon	[31]
Crystal Ball function <sup>3</sup>	Skwarnicki:1986xj	[32]
Wilks' theorem	Wilks:1938dza	[33]
BDT	Breiman	[19]
BDT training	AdaBoost	[20]
HLT2 topo	BBDT	[11]
DecayTreeFitter	Hulsbergen:2005pu	[34]
<i>sPlot</i>	Pivk:2004ty	[35]
Punzi's optimization	Punzi:2003bu	[36]
$f_s/f_d$	fsfd	[37]

<sup>3</sup>A valid alternative for most papers where the normalisation is not critical is to use the expression “Gaussian function with a low-mass power-law tail” or “Gaussian function with power-law tails”. In that case, no citation is needed

LHCb-DP number	Title
LHCb-DP-2016-001 [38]	TESLA project
LHCb-DP-2014-002 [4]	LHCb detector performance
LHCb-DP-2014-001 [5]	Performance of the LHCb Vertex Locator
LHCb-DP-2013-004 [39]	Performance of the LHCb calorimeters
LHCb-DP-2013-003 [6]	Performance of the LHCb Outer Tracker
LHCb-DP-2013-002 [40]	Measurement of the track reconstruction efficiency at LHCb
LHCb-DP-2013-001 [41]	Performance of the muon identification at LHCb
LHCb-DP-2012-005 [42]	Radiation damage in the LHCb Vertex Locator
LHCb-DP-2012-004 [9]	The LHCb trigger and its performance in 2011
LHCb-DP-2012-003 [7]	Performance of the LHCb RICH detector at the LHC
LHCb-DP-2012-002 [8]	Performance of the LHCb muon system
LHCb-DP-2012-001 [43]	Radiation hardness of the LHCb Outer Tracker
LHCb-DP-2011-002 [44]	Simulation of machine induced background ...
LHCb-DP-2011-001 [45]	Performance of the LHCb muon system with cosmic rays
LHCb-DP-2010-001 [46]	First spatial alignment of the LHCb VELO ...

LHCb-TDR number	Title
LHCb-TDR-016 [47]	Trigger and online upgrade
LHCb-TDR-015 [48]	Tracker upgrade
LHCb-TDR-014 [49]	PID upgrade
LHCb-TDR-013 [50]	VELO upgrade
LHCb-TDR-012 [51]	Framework TDR for the upgrade
LHCb-TDR-011 [52]	Computing
LHCb-TDR-010 [53]	Trigger
LHCb-TDR-009 [54]	Reoptimized detector
LHCb-TDR-008 [55]	Inner Tracker
LHCb-TDR-007 [56]	Online, DAQ, ECS
LHCb-TDR-006 [57]	Outer Tracker
LHCb-TDR-005 [58]	VELO
LHCb-TDR-004 [59]	Muon system
LHCb-TDR-003 [60]	RICH
LHCb-TDR-002 [61]	Calorimeters
LHCb-TDR-001 [62]	Magnet

Table 3: LHCb-PAPERS (which have their identifier as their cite code). Note that LHCb-PAPER-2011-039 does not exist.

LHCb-PAPER-2016-040 [63]	LHCb-PAPER-2016-039 [64]
LHCb-PAPER-2016-038 [65]	LHCb-PAPER-2016-037 [66]
LHCb-PAPER-2016-036 [67]	LHCb-PAPER-2016-035 [68]
LHCb-PAPER-2016-034 [69]	LHCb-PAPER-2016-033 [70]
LHCb-PAPER-2016-032 [71]	LHCb-PAPER-2016-031 [72]
LHCb-PAPER-2016-030 [73]	LHCb-PAPER-2016-029 [74]
LHCb-PAPER-2016-028 [75]	LHCb-PAPER-2016-027 [76]
LHCb-PAPER-2016-026 [77]	LHCb-PAPER-2016-025 [78]
LHCb-PAPER-2016-024 [79]	LHCb-PAPER-2016-023 [80]



– continued from previous page.

LHCb-PAPER-2016-022 [81]	LHCb-PAPER-2016-021 [82]
LHCb-PAPER-2016-020 [83]	LHCb-PAPER-2016-019 [84]
LHCb-PAPER-2016-018 [85]	LHCb-PAPER-2016-017 [86]
LHCb-PAPER-2016-016 [87]	LHCb-PAPER-2016-015 [88]
LHCb-PAPER-2016-014 [89]	LHCb-PAPER-2016-013 [90]
LHCb-PAPER-2016-012 [91]	LHCb-PAPER-2016-011 [92]
LHCb-PAPER-2016-010 [93]	LHCb-PAPER-2016-009 [94]
LHCb-PAPER-2016-008 [95]	LHCb-PAPER-2016-007 [96]
LHCb-PAPER-2016-006 [97]	LHCb-PAPER-2016-005 [98]
LHCb-PAPER-2016-004 [99]	LHCb-PAPER-2016-003 [100]
LHCb-PAPER-2016-002 [101]	LHCb-PAPER-2016-001 [102]
LHCb-PAPER-2015-060 [103]	LHCb-PAPER-2015-059 [104]
LHCb-PAPER-2015-058 [105]	LHCb-PAPER-2015-057 [106]
LHCb-PAPER-2015-056 [107]	LHCb-PAPER-2015-055 [108]
LHCb-PAPER-2015-054 [109]	LHCb-PAPER-2015-053 [110]
LHCb-PAPER-2015-052 [111]	LHCb-PAPER-2015-051 [112]
LHCb-PAPER-2015-050 [113]	LHCb-PAPER-2015-049 [114]
LHCb-PAPER-2015-048 [115]	LHCb-PAPER-2015-047 [116]
LHCb-PAPER-2015-046 [117]	LHCb-PAPER-2015-045 [118]
LHCb-PAPER-2015-044 [119]	LHCb-PAPER-2015-043 [120]
LHCb-PAPER-2015-042 [121]	LHCb-PAPER-2015-041 [122]
LHCb-PAPER-2015-040 [123]	LHCb-PAPER-2015-039 [124]
LHCb-PAPER-2015-038 [125]	LHCb-PAPER-2015-037 [126]
LHCb-PAPER-2015-036 [127]	LHCb-PAPER-2015-035 [128]
LHCb-PAPER-2015-034 [129]	LHCb-PAPER-2015-033 [130]
LHCb-PAPER-2015-032 [131]	LHCb-PAPER-2015-031 [132]
LHCb-PAPER-2015-030 [133]	LHCb-PAPER-2015-029 [29]
LHCb-PAPER-2015-028 [134]	LHCb-PAPER-2015-027 [135]
LHCb-PAPER-2015-026 [136]	LHCb-PAPER-2015-025 [137]
LHCb-PAPER-2015-024 [138]	LHCb-PAPER-2015-023 [139]
LHCb-PAPER-2015-022 [140]	LHCb-PAPER-2015-021 [141]
LHCb-PAPER-2015-020 [142]	LHCb-PAPER-2015-019 [143]
LHCb-PAPER-2015-018 [144]	LHCb-PAPER-2015-017 [145]
LHCb-PAPER-2015-016 [146]	LHCb-PAPER-2015-015 [147]
LHCb-PAPER-2015-014 [148]	LHCb-PAPER-2015-013 [149]
LHCb-PAPER-2015-012 [150]	LHCb-PAPER-2015-011 [151]
LHCb-PAPER-2015-010 [152]	LHCb-PAPER-2015-009 [153]
LHCb-PAPER-2015-008 [154]	LHCb-PAPER-2015-007 [155]
LHCb-PAPER-2015-006 [156]	LHCb-PAPER-2015-005 [157]
LHCb-PAPER-2015-004 [158]	LHCb-PAPER-2015-003 [159]
LHCb-PAPER-2015-002 [160]	LHCb-PAPER-2015-001 [161]
LHCb-PAPER-2014-070 [162]	LHCb-PAPER-2014-069 [163]
LHCb-PAPER-2014-068 [164]	LHCb-PAPER-2014-067 [165]
LHCb-PAPER-2014-066 [166]	LHCb-PAPER-2014-065 [167]
LHCb-PAPER-2014-064 [168]	LHCb-PAPER-2014-063 [169]
LHCb-PAPER-2014-062 [170]	LHCb-PAPER-2014-061 [171]

– continued from previous page.

LHCb-PAPER-2014-060 [172]	LHCb-PAPER-2014-059 [173]
LHCb-PAPER-2014-058 [174]	LHCb-PAPER-2014-057 [175]
LHCb-PAPER-2014-056 [176]	LHCb-PAPER-2014-055 [177]
LHCb-PAPER-2014-054 [178]	LHCb-PAPER-2014-053 [179]
LHCb-PAPER-2014-052 [180]	LHCb-PAPER-2014-051 [181]
LHCb-PAPER-2014-050 [182]	LHCb-PAPER-2014-049 [183]
LHCb-PAPER-2014-048 [184]	LHCb-PAPER-2014-047 [185]
LHCb-PAPER-2014-046 [186]	LHCb-PAPER-2014-045 [187]
LHCb-PAPER-2014-044 [188]	LHCb-PAPER-2014-043 [189]
LHCb-PAPER-2014-042 [190]	LHCb-PAPER-2014-041 [191]
LHCb-PAPER-2014-040 [192]	LHCb-PAPER-2014-039 [193]
LHCb-PAPER-2014-038 [194]	LHCb-PAPER-2014-037 [195]
LHCb-PAPER-2014-036 [196]	LHCb-PAPER-2014-035 [197]
LHCb-PAPER-2014-034 [198]	LHCb-PAPER-2014-033 [199]
LHCb-PAPER-2014-032 [200]	LHCb-PAPER-2014-031 [201]
LHCb-PAPER-2014-030 [202]	LHCb-PAPER-2014-029 [203]
LHCb-PAPER-2014-028 [204]	LHCb-PAPER-2014-027 [205]
LHCb-PAPER-2014-026 [206]	LHCb-PAPER-2014-025 [207]
LHCb-PAPER-2014-024 [208]	LHCb-PAPER-2014-023 [209]
LHCb-PAPER-2014-022 [210]	LHCb-PAPER-2014-021 [211]
LHCb-PAPER-2014-020 [212]	LHCb-PAPER-2014-019 [213]
LHCb-PAPER-2014-018 [214]	LHCb-PAPER-2014-017 [215]
LHCb-PAPER-2014-016 [216]	LHCb-PAPER-2014-015 [217]
LHCb-PAPER-2014-014 [218]	LHCb-PAPER-2014-013 [219]
LHCb-PAPER-2014-012 [220]	LHCb-PAPER-2014-011 [221]
LHCb-PAPER-2014-010 [222]	LHCb-PAPER-2014-009 [223]
LHCb-PAPER-2014-008 [224]	LHCb-PAPER-2014-007 [225]
LHCb-PAPER-2014-006 [12]	LHCb-PAPER-2014-005 [226]
LHCb-PAPER-2014-004 [227]	LHCb-PAPER-2014-003 [228]
LHCb-PAPER-2014-002 [229]	LHCb-PAPER-2014-001 [230]
LHCb-PAPER-2013-070 [27]	LHCb-PAPER-2013-069 [231]
LHCb-PAPER-2013-068 [232]	LHCb-PAPER-2013-067 [233]
LHCb-PAPER-2013-066 [234]	LHCb-PAPER-2013-065 [235]
LHCb-PAPER-2013-064 [236]	LHCb-PAPER-2013-063 [237]
LHCb-PAPER-2013-062 [238]	LHCb-PAPER-2013-061 [239]
LHCb-PAPER-2013-060 [240]	LHCb-PAPER-2013-059 [241]
LHCb-PAPER-2013-058 [242]	LHCb-PAPER-2013-057 [243]
LHCb-PAPER-2013-056 [244]	LHCb-PAPER-2013-055 [245]
LHCb-PAPER-2013-054 [246]	LHCb-PAPER-2013-053 [247]
LHCb-PAPER-2013-052 [248]	LHCb-PAPER-2013-051 [249]
LHCb-PAPER-2013-050 [250]	LHCb-PAPER-2013-049 [251]
LHCb-PAPER-2013-048 [252]	LHCb-PAPER-2013-047 [253]
LHCb-PAPER-2013-046 [254]	LHCb-PAPER-2013-045 [255]
LHCb-PAPER-2013-044 [256]	LHCb-PAPER-2013-043 [257]
LHCb-PAPER-2013-042 [258]	LHCb-PAPER-2013-041 [259]
LHCb-PAPER-2013-040 [260]	LHCb-PAPER-2013-039 [261]

– continued from previous page.

LHCb-PAPER-2013-038 [262]	LHCb-PAPER-2013-037 [263]
LHCb-PAPER-2013-036 [264]	LHCb-PAPER-2013-035 [28]
LHCb-PAPER-2013-034 [265]	LHCb-PAPER-2013-033 [266]
LHCb-PAPER-2013-032 [267]	LHCb-PAPER-2013-031 [268]
LHCb-PAPER-2013-030 [269]	LHCb-PAPER-2013-029 [270]
LHCb-PAPER-2013-028 [271]	LHCb-PAPER-2013-027 [272]
LHCb-PAPER-2013-026 [273]	LHCb-PAPER-2013-025 [274]
LHCb-PAPER-2013-024 [275]	LHCb-PAPER-2013-023 [276]
LHCb-PAPER-2013-022 [277]	LHCb-PAPER-2013-021 [278]
LHCb-PAPER-2013-020 [279]	LHCb-PAPER-2013-019 [280]
LHCb-PAPER-2013-018 [281]	LHCb-PAPER-2013-017 [282]
LHCb-PAPER-2013-016 [283]	LHCb-PAPER-2013-015 [284]
LHCb-PAPER-2013-014 [285]	LHCb-PAPER-2013-013 [286]
LHCb-PAPER-2013-012 [287]	LHCb-PAPER-2013-011 [288]
LHCb-PAPER-2013-010 [289]	LHCb-PAPER-2013-009 [290]
LHCb-PAPER-2013-008 [291]	LHCb-PAPER-2013-007 [292]
LHCb-PAPER-2013-006 [293]	LHCb-PAPER-2013-005 [294]
LHCb-PAPER-2013-004 [295]	LHCb-PAPER-2013-003 [296]
LHCb-PAPER-2013-002 [297]	LHCb-PAPER-2013-001 [298]
<hr/>	
LHCb-PAPER-2012-057 [299]	
LHCb-PAPER-2012-056 [300]	LHCb-PAPER-2012-055 [301]
LHCb-PAPER-2012-054 [302]	LHCb-PAPER-2012-053 [303]
LHCb-PAPER-2012-052 [304]	LHCb-PAPER-2012-051 [305]
LHCb-PAPER-2012-050 [306]	LHCb-PAPER-2012-049 [307]
LHCb-PAPER-2012-048 [308]	LHCb-PAPER-2012-047 [309]
LHCb-PAPER-2012-046 [310]	LHCb-PAPER-2012-045 [311]
LHCb-PAPER-2012-044 [312]	LHCb-PAPER-2012-043 [313]
LHCb-PAPER-2012-042 [314]	LHCb-PAPER-2012-041 [315]
LHCb-PAPER-2012-040 [316]	LHCb-PAPER-2012-039 [317]
LHCb-PAPER-2012-038 [318]	LHCb-PAPER-2012-037 [319]
LHCb-PAPER-2012-036 [320]	LHCb-PAPER-2012-035 [321]
LHCb-PAPER-2012-034 [322]	LHCb-PAPER-2012-033 [323]
LHCb-PAPER-2012-032 [324]	LHCb-PAPER-2012-031 [325]
LHCb-PAPER-2012-030 [326]	LHCb-PAPER-2012-029 [327]
LHCb-PAPER-2012-028 [328]	LHCb-PAPER-2012-027 [329]
LHCb-PAPER-2012-026 [330]	LHCb-PAPER-2012-025 [331]
LHCb-PAPER-2012-024 [332]	LHCb-PAPER-2012-023 [333]
LHCb-PAPER-2012-022 [334]	LHCb-PAPER-2012-021 [335]
LHCb-PAPER-2012-020 [336]	LHCb-PAPER-2012-019 [337]
LHCb-PAPER-2012-018 [338]	LHCb-PAPER-2012-017 [339]
LHCb-PAPER-2012-016 [340]	LHCb-PAPER-2012-015 [341]
LHCb-PAPER-2012-014 [342]	LHCb-PAPER-2012-013 [343]
LHCb-PAPER-2012-012 [344]	LHCb-PAPER-2012-011 [345]
LHCb-PAPER-2012-010 [346]	LHCb-PAPER-2012-009 [347]
LHCb-PAPER-2012-008 [348]	LHCb-PAPER-2012-007 [349]
LHCb-PAPER-2012-006 [350]	LHCb-PAPER-2012-005 [351]

– continued from previous page.

LHCb-PAPER-2012-004 [352]	LHCb-PAPER-2012-003 [353]
LHCb-PAPER-2012-002 [354]	LHCb-PAPER-2012-001 [355]
LHCb-PAPER-2011-045 [356]	LHCb-PAPER-2011-044 [357]
LHCb-PAPER-2011-043 [358]	LHCb-PAPER-2011-042 [359]
LHCb-PAPER-2011-041 [360]	LHCb-PAPER-2011-040 [361]
LHCb-PAPER-2011-038 [362]	LHCb-PAPER-2011-037 [363]
LHCb-PAPER-2011-036 [364]	LHCb-PAPER-2011-035 [365]
LHCb-PAPER-2011-034 [366]	LHCb-PAPER-2011-033 [367]
LHCb-PAPER-2011-032 [368]	LHCb-PAPER-2011-031 [369]
LHCb-PAPER-2011-031 [370]	LHCb-PAPER-2011-029 [371]
LHCb-PAPER-2011-028 [372]	LHCb-PAPER-2011-027 [373]
LHCb-PAPER-2011-026 [374]	LHCb-PAPER-2011-025 [375]
LHCb-PAPER-2011-024 [376]	LHCb-PAPER-2011-023 [377]
LHCb-PAPER-2011-023 [378]	LHCb-PAPER-2011-021 [379]
LHCb-PAPER-2011-020 [380]	LHCb-PAPER-2011-019 [381]
LHCb-PAPER-2011-018 [382]	LHCb-PAPER-2011-017 [383]
LHCb-PAPER-2011-016 [384]	LHCb-PAPER-2011-015 [385]
LHCb-PAPER-2011-014 [386]	LHCb-PAPER-2011-013 [387]
LHCb-PAPER-2011-012 [388]	LHCb-PAPER-2011-011 [389]
LHCb-PAPER-2011-010 [390]	LHCb-PAPER-2011-009 [391]
LHCb-PAPER-2011-008 [392]	LHCb-PAPER-2011-007 [393]
LHCb-PAPER-2011-006 [394]	LHCb-PAPER-2011-005 [395]
LHCb-PAPER-2011-004 [396]	LHCb-PAPER-2011-003 [397]
LHCb-PAPER-2011-002 [398]	LHCb-PAPER-2011-001 [399]
LHCb-PAPER-2010-002 [400]	LHCb-PAPER-2010-001 [401]

459

Table 4: LHCb-CONFs (which have their identifier as their cite code). Note that LHCb-CONF-2011-032 does not exist.

	LHCb-CONF-2016-005 [402]
LHCb-CONF-2016-004 [403]	LHCb-CONF-2016-003 [404]
LHCb-CONF-2016-002 [405]	LHCb-CONF-2016-001 [406]
LHCb-CONF-2015-005 [407]	
LHCb-CONF-2015-004 [408]	LHCb-CONF-2015-003 [409]
LHCb-CONF-2015-002 [410]	LHCb-CONF-2015-001 [411]
LHCb-CONF-2014-004 [412] <sup>4</sup>	LHCb-CONF-2014-003 [413]
LHCb-CONF-2014-002 [414]	LHCb-CONF-2014-001 [415]
LHCb-CONF-2013-013 [416]	
LHCb-CONF-2013-012 [417]	LHCb-CONF-2013-011 [418]
LHCb-CONF-2013-010 [419]	LHCb-CONF-2013-009 [420]
LHCb-CONF-2013-008 [421]	LHCb-CONF-2013-007 [422]

<sup>4</sup>If you cite the gamma combination, always also cite the latest gamma paper as `\cite{LHCb-PAPER-2013-020,*LHCb-CONF-2014-004}` (unless you cite LHCb-PAPER-2013-020 separately too).

– continued from previous page.

LHCb-CONF-2013-006	[423]	LHCb-CONF-2013-005	[424]
LHCb-CONF-2013-004	[425]	LHCb-CONF-2013-003	[426]
LHCb-CONF-2013-002	[427]	LHCb-CONF-2013-001	[428]
LHCb-CONF-2012-034	[429]	LHCb-CONF-2012-033	[430]
LHCb-CONF-2012-032	[431]	LHCb-CONF-2012-031	[432]
LHCb-CONF-2012-030	[433]	LHCb-CONF-2012-029	[434]
LHCb-CONF-2012-028	[435]	LHCb-CONF-2012-027	[436]
LHCb-CONF-2012-026	[437]	LHCb-CONF-2012-025	[438]
LHCb-CONF-2012-024	[439]	LHCb-CONF-2012-023	[440]
LHCb-CONF-2012-022	[441]	LHCb-CONF-2012-021	[442]
LHCb-CONF-2012-020	[443]	LHCb-CONF-2012-019	[444]
LHCb-CONF-2012-018	[445]	LHCb-CONF-2012-017	[446]
LHCb-CONF-2012-016	[447]	LHCb-CONF-2012-015	[448]
LHCb-CONF-2012-014	[449]	LHCb-CONF-2012-013	[450]
LHCb-CONF-2012-012	[451]	LHCb-CONF-2012-011	[452]
LHCb-CONF-2012-010	[453]	LHCb-CONF-2012-009	[454]
LHCb-CONF-2012-008	[455]	LHCb-CONF-2012-007	[456]
LHCb-CONF-2012-006	[457]	LHCb-CONF-2012-005	[458]
LHCb-CONF-2012-004	[459]	LHCb-CONF-2012-003	[460]
LHCb-CONF-2012-002	[461]	LHCb-CONF-2012-001	[462]
LHCb-CONF-2011-062	[463]	LHCb-CONF-2011-061	[464]
LHCb-CONF-2011-060	[465]	LHCb-CONF-2011-059	[466]
LHCb-CONF-2011-058	[467]	LHCb-CONF-2011-057	[468]
LHCb-CONF-2011-056	[469]	LHCb-CONF-2011-055	[470]
LHCb-CONF-2011-054	[471]	LHCb-CONF-2011-053	[472]
LHCb-CONF-2011-052	[473]	LHCb-CONF-2011-051	[474]
LHCb-CONF-2011-050	[475]	LHCb-CONF-2011-049	[476]
LHCb-CONF-2011-048	[477]	LHCb-CONF-2011-047	[478]
LHCb-CONF-2011-046	[479]	LHCb-CONF-2011-045	[480]
LHCb-CONF-2011-044	[481]	LHCb-CONF-2011-043	[482]
LHCb-CONF-2011-042	[483]	LHCb-CONF-2011-041	[484]
LHCb-CONF-2011-040	[485]	LHCb-CONF-2011-039	[486]
LHCb-CONF-2011-038	[487]	LHCb-CONF-2011-037	[488]
LHCb-CONF-2011-036	[489]	LHCb-CONF-2011-035	[490]
LHCb-CONF-2011-034	[491]	LHCb-CONF-2011-033	[492]
LHCb-CONF-2011-031	[493]		
LHCb-CONF-2011-030	[494]	LHCb-CONF-2011-029	[495]
LHCb-CONF-2011-028	[496]	LHCb-CONF-2011-027	[497]
LHCb-CONF-2011-026	[498]	LHCb-CONF-2011-025	[499]
LHCb-CONF-2011-024	[500]	LHCb-CONF-2011-023	[501]
LHCb-CONF-2011-023	[502]	LHCb-CONF-2011-021	[503]
LHCb-CONF-2011-020	[504]	LHCb-CONF-2011-019	[505]
LHCb-CONF-2011-018	[506]	LHCb-CONF-2011-017	[507]
LHCb-CONF-2011-016	[508]	LHCb-CONF-2011-015	[509]
LHCb-CONF-2011-014	[510]	LHCb-CONF-2011-013	[511]
LHCb-CONF-2011-012	[512]	LHCb-CONF-2011-011	[513]

– continued from previous page.

LHCb-CONF-2011-010 [514]	LHCb-CONF-2011-009 [515]
LHCb-CONF-2011-008 [516]	LHCb-CONF-2011-007 [517]
LHCb-CONF-2011-006 [518]	LHCb-CONF-2011-005 [519]
LHCb-CONF-2011-004 [520]	LHCb-CONF-2011-003 [25]
LHCb-CONF-2011-002 [521]	LHCb-CONF-2011-001 [522]
LHCb-CONF-2010-014 [523]	LHCb-CONF-2010-013 [524]
LHCb-CONF-2010-012 [525]	LHCb-CONF-2010-011 [526]
LHCb-CONF-2010-010 [527]	LHCb-CONF-2010-009 [528]
LHCb-CONF-2010-008 [529]	

460

461 Some LHCb papers quoted together will look like [393–397]. The combination of CMS  
462 and LHCb results on  $B_{(s)}^0 \rightarrow \mu^+ \mu^-$  should be cited like [417].

## 463 B Standard symbols

464 As explained in Sect. 4 this appendix contains standard typesetting of symbols, particle  
465 names, units etc. in LHCb documents.

466 In the file `lhcb-symbols-def.tex`, which is included, a large number of symbols is  
467 defined. While they can lead to quicker typing, the main reason is to ensure a uniform  
468 notation within a document and between different LHCb documents. If a symbol like  
469 `\CP` to typeset  $CP$  violation is available for a unit, particle name, process or whatever, it  
470 should be used. If you do not agree with the notation you should ask to get the definition  
471 in `lhcb-symbols-def.tex` changed rather than just ignoring it.

472 All the main particles have been given symbols. The  $B$  mesons are thus named  $B^+$ ,  
473  $B^0$ ,  $B_s^0$ , and  $B_c^+$ . There is no need to go into math mode to use particle names, thus  
474 saving the typing of many  $\$$  signs. By default particle names are typeset in italic type  
475 to agree with the PDG preference. To get roman particle names you can just change  
476 `\setboolean{uprightparticles}{false}` to `true` at the top of this template.

477 There is a large number of units typeset that ensures the correct use of fonts, capitals  
478 and spacing. As an example we have  $m_{B_s^0} = 5366.3 \pm 0.6 \text{ MeV}/c^2$ . Note that  $\mu\text{m}$  is typeset  
479 with an upright  $\mu$ , even if the particle names have slanted greek letters.

480 A set of useful symbols are defined for working groups. More of these symbols can be  
481 included later. As an example in the Rare Decay group we have several different analyses  
482 looking for a measurement of  $\mathcal{C}_7^{(\text{eff})}$  and  $\mathcal{O}_7'$ .

## 483 C List of all symbols

### 484 C.1 Experiments

<code>\lhcb</code>	LHCb	<code>\atlas</code>	ATLAS	<code>\cms</code>	CMS
<code>\alice</code>	ALICE	<code>\babar</code>	BaBar	<code>\belle</code>	Belle
<code>\cleo</code>	CLEO	<code>\cdf</code>	CDF	<code>\dzero</code>	D0
485 <code>\aleph</code>	ALEPH	<code>\delphi</code>	DELPHI	<code>\opal</code>	OPAL
<code>\lthree</code>	L3	<code>\sld</code>	SLD	<code>\cern</code>	CERN
<code>\lhcb</code>	LHC	<code>\lep</code>	LEP	<code>\tevatron</code>	Tevatron

### 486 C.1.1 LHCb sub-detectors and sub-systems

<code>\velo</code>	VELO	<code>\rich</code>	RICH	<code>\richone</code>	RICH1
<code>\richtwo</code>	RICH2	<code>\ttracker</code>	TT	<code>\intr</code>	IT
<code>\st</code>	ST	<code>\ot</code>	OT	<code>\spd</code>	SPD
<code>\presh</code>	PS	<code>\ecal</code>	ECAL	<code>\hcal</code>	HCAL
487 <code>\MagUp</code>	<i>MagUp</i>	<code>\MagDown</code>	<i>MagDown</i>	<code>\ode</code>	ODE
<code>\daq</code>	DAQ	<code>\tfc</code>	TFC	<code>\ecs</code>	ECS
<code>\lone</code>	L0	<code>\hlt</code>	HLT	<code>\hlton</code>	HLT1
<code>\hltwo</code>	HLT2				

## 488 C.2 Particles

### 489 C.2.1 Leptons

<code>\electron</code>	$e$	<code>\en</code>	$e^-$	<code>\ep</code>	$e^+$
<code>\epm</code>	$e^\pm$	<code>\epem</code>	$e^+e^-$	<code>\muon</code>	$\mu$
<code>\mup</code>	$\mu^+$	<code>\mun</code>	$\mu^-$	<code>\mumu</code>	$\mu^+\mu^-$
<code>\tauon</code>	$\tau$	<code>\taup</code>	$\tau^+$	<code>\taum</code>	$\tau^-$
490 <code>\tautau</code>	$\tau^+\tau^-$	<code>\lepton</code>	$\ell$	<code>\ellm</code>	$\ell^-$
<code>\ellp</code>	$\ell^+$	<code>\ellell</code>	$\ell^+\ell^-$	<code>\neu</code>	$\nu$
<code>\neub</code>	$\bar{\nu}$	<code>\neue</code>	$\nu_e$	<code>\neueb</code>	$\bar{\nu}_e$
<code>\neum</code>	$\nu_\mu$	<code>\neumb</code>	$\bar{\nu}_\mu$	<code>\neut</code>	$\nu_\tau$
<code>\neutb</code>	$\bar{\nu}_\tau$	<code>\neul</code>	$\nu_\ell$	<code>\neulb</code>	$\bar{\nu}_\ell$

### 491 C.2.2 Gauge bosons and scalars

<code>\g</code>	$\gamma$	<code>\H</code>	$H^0$	<code>\Hp</code>	$H^+$
<code>\Hm</code>	$H^-$	<code>\Hpm</code>	$H^\pm$	<code>\W</code>	$W$
492 <code>\Wp</code>	$W^+$	<code>\Wm</code>	$W^-$	<code>\Wpm</code>	$W^\pm$
<code>\Z</code>	$Z$				

### 493 C.2.3 Quarks

<code>\quark</code>	$q$	<code>\quarkbar</code>	$\bar{q}$	<code>\qqbar</code>	$q\bar{q}$
<code>\uquark</code>	$u$	<code>\uquarkbar</code>	$\bar{u}$	<code>\uubar</code>	$u\bar{u}$
<code>\dquark</code>	$d$	<code>\dquarkbar</code>	$\bar{d}$	<code>\ddbar</code>	$d\bar{d}$
494 <code>\squark</code>	$s$	<code>\squarkbar</code>	$\bar{s}$	<code>\ssbar</code>	$s\bar{s}$
<code>\cquark</code>	$c$	<code>\cquarkbar</code>	$\bar{c}$	<code>\ccbar</code>	$c\bar{c}$
<code>\bquark</code>	$b$	<code>\bquarkbar</code>	$\bar{b}$	<code>\bbbar</code>	$b\bar{b}$
<code>\tquark</code>	$t$	<code>\tquarkbar</code>	$\bar{t}$	<code>\ttbar</code>	$t\bar{t}$

#### 495 C.2.4 Light mesons

<code>\hadron</code>	$h$	<code>\pion</code>	$\pi$	<code>\piz</code>	$\pi^0$
<code>\pizs</code>	$\pi^0_s$	<code>\pip</code>	$\pi^+$	<code>\pim</code>	$\pi^-$
<code>\pipm</code>	$\pi^\pm$	<code>\pimp</code>	$\pi^\mp$	<code>\rhomeson</code>	$\rho$
<code>\rhoz</code>	$\rho^0$	<code>\rhop</code>	$\rho^+$	<code>\rhom</code>	$\rho^-$
<code>\rhopm</code>	$\rho^\pm$	<code>\rhomp</code>	$\rho^\mp$	<code>\kaon</code>	$K$
<code>\Kb</code>	$\bar{K}$	<code>\KorKbar</code>	$\bar{K}$	<code>\Kz</code>	$K^0$
496 <code>\Kzb</code>	$\bar{K}^0$	<code>\Kp</code>	$K^+$	<code>\Km</code>	$K^-$
<code>\Kpm</code>	$K^\pm$	<code>\Kmp</code>	$K^\mp$	<code>\KS</code>	$K^0_s$
<code>\KL</code>	$K^0_L$	<code>\Kstarz</code>	$K^{*0}$	<code>\Kstarzb</code>	$\bar{K}^{*0}$
<code>\Kstar</code>	$K^*$	<code>\Kstarb</code>	$\bar{K}^*$	<code>\Kstarp</code>	$K^{*+}$
<code>\Kstarm</code>	$K^{*-}$	<code>\Kstarpm</code>	$K^{*\mp}$	<code>\Kstarpmp</code>	$K^{*\mp}$
<code>\etaz</code>	$\eta$	<code>\etapr</code>	$\eta'$	<code>\phiz</code>	$\phi$
<code>\omegaz</code>	$\omega$				

#### 497 C.2.5 Heavy mesons

<code>\D</code>	$D$	<code>\Db</code>	$\bar{D}$	<code>\DorDbar</code>	$\bar{D}$
<code>\Dz</code>	$D^0$	<code>\Dzb</code>	$\bar{D}^0$	<code>\Dp</code>	$D^+$
<code>\Dm</code>	$D^-$	<code>\Dpm</code>	$D^\pm$	<code>\Dmp</code>	$D^\mp$
<code>\Dstar</code>	$D^*$	<code>\Dstarb</code>	$\bar{D}^*$	<code>\Dstarz</code>	$D^{*0}$
<code>\Dstarzb</code>	$\bar{D}^{*0}$	<code>\Dstarp</code>	$D^{*+}$	<code>\Dstarm</code>	$D^{*-}$
<code>\Dstarpm</code>	$D^{*\pm}$	<code>\Dstarpmp</code>	$D^{*\mp}$	<code>\Ds</code>	$D^+_s$
<code>\Dsp</code>	$D^+_s$	<code>\Dsm</code>	$D^-_s$	<code>\Dspm</code>	$D^\pm_s$
498 <code>\Dsmp</code>	$D^\mp_s$	<code>\Dss</code>	$D^{*+}_s$	<code>\Dssp</code>	$D^{*+}_s$
<code>\Dssm</code>	$D^{*-}_s$	<code>\Dsspm</code>	$D^{*\pm}_s$	<code>\Dssmp</code>	$D^{*\mp}_s$
<code>\B</code>	$B$	<code>\Bbar</code>	$\bar{B}$	<code>\Bb</code>	$\bar{B}$
<code>\BorBbar</code>	$\bar{B}$	<code>\Bz</code>	$B^0$	<code>\Bzb</code>	$\bar{B}^0$
<code>\Bu</code>	$B^+$	<code>\Bub</code>	$B^-$	<code>\Bp</code>	$B^+$
<code>\Bm</code>	$B^-$	<code>\Bpm</code>	$B^\pm$	<code>\Bmp</code>	$B^\mp$
<code>\Bd</code>	$B^0$	<code>\Bs</code>	$B^0_s$	<code>\Bsb</code>	$\bar{B}^0_s$
<code>\Bdb</code>	$\bar{B}^0$	<code>\Bc</code>	$B^+_c$	<code>\Bcp</code>	$B^+_c$
<code>\Bcm</code>	$B^-_c$	<code>\Bcpm</code>	$B^\pm_c$		

#### 499 C.2.6 Onia

<code>\jpsi</code>	$J/\psi$	<code>\psitwos</code>	$\psi(2S)$	<code>\psiprpr</code>	$\psi(3770)$
<code>\etac</code>	$\eta_c$	<code>\chiczero</code>	$\chi_{c0}$	<code>\chicone</code>	$\chi_{c1}$
500 <code>\chictwo</code>	$\chi_{c2}$	<code>\OneS</code>	$\Upsilon(1S)$	<code>\TwoS</code>	$\Upsilon(2S)$
<code>\ThreeS</code>	$\Upsilon(3S)$	<code>\FourS</code>	$\Upsilon(4S)$	<code>\FiveS</code>	$\Upsilon(5S)$
<code>\chic</code>	$\chi_c$				



### 501 C.2.7 Baryons

<code>\proton</code>	$p$	<code>\antiproton</code>	$\bar{p}$	<code>\neutron</code>	$n$
<code>\antineutron</code>	$\bar{n}$	<code>\Deltares</code>	$\Delta$	<code>\Deltaresbar</code>	$\bar{\Delta}$
<code>\Xires</code>	$\Xi$	<code>\Xiresbar</code>	$\bar{\Xi}$	<code>\Lz</code>	$\Lambda$
<code>\Lbar</code>	$\bar{\Lambda}$	<code>\LorLbar</code>	$\bar{\Lambda}^{(\bar{\phantom{a}})}$	<code>\Lambdares</code>	$\Lambda$
<code>\Lambdaresbar</code>	$\bar{\Lambda}$	<code>\Sigmares</code>	$\Sigma$	<code>\Sigmaresbar</code>	$\bar{\Sigma}$
<code>\Omegares</code>	$\Omega$	<code>\Omegaresbar</code>	$\bar{\Omega}$	<code>\Lb</code>	$\Lambda_b^0$
502 <code>\Lbbar</code>	$\bar{\Lambda}_b^0$	<code>\Lc</code>	$\Lambda_c^+$	<code>\Lcbar</code>	$\bar{\Lambda}_c^-$
<code>\Xib</code>	$\Xi_b$	<code>\Xibz</code>	$\Xi_b^0$	<code>\Xibm</code>	$\Xi_b^-$
<code>\Xibbar</code>	$\bar{\Xi}_b$	<code>\Xibbarz</code>	$\bar{\Xi}_b^0$	<code>\Xibbarp</code>	$\bar{\Xi}_b^+$
<code>\Xic</code>	$\Xi_c$	<code>\Xicz</code>	$\Xi_c^0$	<code>\Xicp</code>	$\Xi_c^+$
<code>\Xicbar</code>	$\bar{\Xi}_c$	<code>\Xicbarz</code>	$\bar{\Xi}_c^0$	<code>\Xicbarm</code>	$\bar{\Xi}_c^-$
<code>\Omegac</code>	$\Omega_c^0$	<code>\Omegacbar</code>	$\bar{\Omega}_c^0$	<code>\Omegab</code>	$\Omega_b^-$
<code>\Omegabbar</code>	$\bar{\Omega}_b^+$				

## 503 C.3 Physics symbols

### 504 C.3.1 Decays

<code>\BF</code>	$\mathcal{B}$	<code>\BRvis</code>	$\mathcal{B}_{\text{vis}}$	<code>\BR</code>	$\mathcal{B}$
505 <code>\decay[2] \decay{a }{b c }</code>	$a \rightarrow bc$	<code>\ra</code>	$\rightarrow$	<code>\to</code>	$\rightarrow$

### 506 C.3.2 Lifetimes

<code>\tauBs</code>	$\tau_{B_s^0}$	<code>\tauBd</code>	$\tau_{B^0}$	<code>\tauBz</code>	$\tau_{B^0}$
507 <code>\tauBu</code>	$\tau_{B^+}$	<code>\tauDp</code>	$\tau_{D^+}$	<code>\tauDz</code>	$\tau_{D^0}$
<code>\tauL</code>	$\tau_L$	<code>\tauH</code>	$\tau_H$		

### 508 C.3.3 Masses

<code>\mBd</code>	$m_{B^0}$	<code>\mBp</code>	$m_{B^+}$	<code>\mBs</code>	$m_{B_s^0}$
509 <code>\mBc</code>	$m_{B_c^+}$	<code>\mLb</code>	$m_{\Lambda_b^0}$		

### 510 C.3.4 EW theory, groups

<code>\grpsuthree</code>	$\text{SU}(3)$	<code>\grpsutw</code>	$\text{SU}(2)$	<code>\grpuone</code>	$\text{U}(1)$
<code>\ssqtw</code>	$\sin^2 \theta_W$	<code>\csqtw</code>	$\cos^2 \theta_W$	<code>\stw</code>	$\sin \theta_W$
<code>\ctw</code>	$\cos \theta_W$	<code>\ssqtweff</code>	$\sin^2 \theta_W^{\text{eff}}$	<code>\csqtweff</code>	$\cos^2 \theta_W^{\text{eff}}$
511 <code>\stweff</code>	$\sin \theta_W^{\text{eff}}$	<code>\ctweff</code>	$\cos \theta_W^{\text{eff}}$	<code>\gv</code>	$g_V$
<code>\ga</code>	$g_A$	<code>\order</code>	$\mathcal{O}$	<code>\ordalph</code>	$\mathcal{O}(\alpha)$
<code>\ordalsq</code>	$\mathcal{O}(\alpha^2)$	<code>\ordalcub</code>	$\mathcal{O}(\alpha^3)$		

### 512 C.3.5 QCD parameters

<code>\as</code>	$\alpha_s$	<code>\MSb</code>	$\overline{\text{MS}}$	<code>\lqcd</code>	$\Lambda_{\text{QCD}}$
513 <code>\qsq</code>	$q^2$				

### 514 C.3.6 CKM, CP violation

<code>\eps</code>	$\varepsilon$	<code>\epsK</code>	$\varepsilon_K$	<code>\epsB</code>	$\varepsilon_B$
<code>\epsp</code>	$\varepsilon'_K$	<code>\CP</code>	$CP$	<code>\CPT</code>	$CPT$
<code>\rhobar</code>	$\bar{\rho}$	<code>\etabar</code>	$\bar{\eta}$	<code>\Vud</code>	$V_{ud}$
<code>\Vcd</code>	$V_{cd}$	<code>\Vtd</code>	$V_{td}$	<code>\Vus</code>	$V_{us}$
515 <code>\Vcs</code>	$V_{cs}$	<code>\Vts</code>	$V_{ts}$	<code>\Vub</code>	$V_{ub}$
<code>\Vcb</code>	$V_{cb}$	<code>\Vtb</code>	$V_{tb}$	<code>\Vuds</code>	$V_{ud}^*$
<code>\Vcds</code>	$V_{cd}^*$	<code>\Vtds</code>	$V_{td}^*$	<code>\Vuss</code>	$V_{us}^*$
<code>\Vcss</code>	$V_{cs}^*$	<code>\Vtss</code>	$V_{ts}^*$	<code>\Vubs</code>	$V_{ub}^*$
<code>\Vcbs</code>	$V_{cb}^*$	<code>\Vtbs</code>	$V_{tb}^*$		

### 516 C.3.7 Oscillations

<code>\dm</code>	$\Delta m$	<code>\dms</code>	$\Delta m_s$	<code>\dmd</code>	$\Delta m_d$
<code>\DG</code>	$\Delta \Gamma$	<code>\DGs</code>	$\Delta \Gamma_s$	<code>\DGd</code>	$\Delta \Gamma_d$
<code>\Gs</code>	$\Gamma_s$	<code>\Gd</code>	$\Gamma_d$	<code>\MBq</code>	$M_{B_q}$
<code>\DGq</code>	$\Delta \Gamma_q$	<code>\Gq</code>	$\Gamma_q$	<code>\dmq</code>	$\Delta m_q$
<code>\GL</code>	$\Gamma_L$	<code>\GH</code>	$\Gamma_H$	<code>\DGsGs</code>	$\Delta \Gamma_s / \Gamma_s$
517 <code>\Delm</code>	$\Delta m$	<code>\ACP</code>	$\mathcal{A}^{CP}$	<code>\Adir</code>	$\mathcal{A}^{\text{dir}}$
<code>\Amix</code>	$\mathcal{A}^{\text{mix}}$	<code>\ADelta</code>	$\mathcal{A}^\Delta$	<code>\phid</code>	$\phi_d$
<code>\sinphid</code>	$\sin \phi_d$	<code>\phis</code>	$\phi_s$	<code>\betas</code>	$\beta_s$
<code>\sbetas</code>	$\sigma(\beta_s)$	<code>\stbetas</code>	$\sigma(2\beta_s)$	<code>\stphis</code>	$\sigma(\phi_s)$
<code>\sinphis</code>	$\sin \phi_s$				

### 518 C.3.8 Tagging

<code>\edet</code>	$\varepsilon_{\text{det}}$	<code>\erec</code>	$\varepsilon_{\text{rec/det}}$	<code>\esel</code>	$\varepsilon_{\text{sel/rec}}$
<code>\etrg</code>	$\varepsilon_{\text{trg/sel}}$	<code>\etot</code>	$\varepsilon_{\text{tot}}$	<code>\mistag</code>	$\omega$
519 <code>\wcomb</code>	$\omega^{\text{comb}}$	<code>\etag</code>	$\varepsilon_{\text{tag}}$	<code>\etagcomb</code>	$\varepsilon_{\text{tag}}^{\text{comb}}$
<code>\effeff</code>	$\varepsilon_{\text{eff}}$	<code>\effeffcomb</code>	$\varepsilon_{\text{eff}}^{\text{comb}}$	<code>\efftag</code>	$\varepsilon_{\text{tag}}(1 - 2\omega)^2$
<code>\effD</code>	$\varepsilon_{\text{tag}} D^2$	<code>\etagprompt</code>	$\varepsilon_{\text{tag}}^{\text{Pr}}$	<code>\etagLL</code>	$\varepsilon_{\text{tag}}^{\text{LL}}$

### 520 C.3.9 Key decay channels

<code>\BdToKstmm</code>	$B^0 \rightarrow K^{*0} \mu^+ \mu^-$	<code>\BdbToKstmm</code>	$\bar{B}^0 \rightarrow \bar{K}^{*0} \mu^+ \mu^-$	<code>\BsToJPsiPhi</code>	$B_s^0 \rightarrow J/\psi \phi$
<code>\BdToJPsiKst</code>	$B^0 \rightarrow J/\psi K^{*0}$	<code>\BdbToJPsiKst</code>	$\bar{B}^0 \rightarrow J/\psi \bar{K}^{*0}$	<code>\BsPhiGam</code>	$B_s^0 \rightarrow \phi \gamma$
521 <code>\BdKstGam</code>	$B^0 \rightarrow K^{*0} \gamma$	<code>\BTohh</code>	$B \rightarrow h^+ h'^-$	<code>\BdTopipi</code>	$B^0 \rightarrow \pi^+ \pi^-$
<code>\BdToKpi</code>	$B^0 \rightarrow K^+ \pi^-$	<code>\BsToKK</code>	$B_s^0 \rightarrow K^+ K^-$	<code>\BsTopiK</code>	$B_s^0 \rightarrow \pi^+ K^-$

### 522 C.3.10 Rare decays

<code>\BdKstee</code>	$B^0 \rightarrow K^{*0} e^+ e^-$	<code>\BdbKstee</code>	$\bar{B}^0 \rightarrow \bar{K}^{*0} e^+ e^-$	<code>\bsll</code>	$b \rightarrow s \ell^+ \ell^-$
<code>\AFB</code>	$A_{\text{FB}}$	<code>\FL</code>	$F_L$	<code>\AT#1</code>	$A_{\text{T}}^2$
523 <code>\btosgam</code>	$b \rightarrow s \gamma$	<code>\btodgam</code>	$b \rightarrow d \gamma$	<code>\Bsmm</code>	$B_s^0 \rightarrow \mu^+ \mu^-$
<code>\Bdmm</code>	$B^0 \rightarrow \mu^+ \mu^-$	<code>\ctl</code>	$\cos \theta_\ell$	<code>\ctk</code>	$\cos \theta_K$

### 524 C.3.11 Wilson coefficients and operators

525	<code>\C#1</code>	<code>\C9</code>	$C_9$	<code>\Cp#1</code>	<code>\Cp7</code>	$C'_7$	<code>\Ceff#1</code>	<code>\Ceff9</code>	$C_9^{(\text{eff})}$
	<code>\Cpeff#1</code>	<code>\Cpeff7</code>	$C_7^{(\text{eff})}$	<code>\Ope#1</code>	<code>\Ope2</code>	$O_2$	<code>\Opep#1</code>	<code>\Opep7</code>	$O'_7$

### 526 C.3.12 Charm

527	<code>\xprime</code>	$x'$	<code>\yprime</code>	$y'$	<code>\ycp</code>	$y_{CP}$
	<code>\agamma</code>	$A_\Gamma$	<code>\dkpicf</code>	$D^0 \rightarrow K^- \pi^+$		

### 528 C.3.13 QM

529	<code>\bra[1]</code>	<code>\bra{a}</code>	$\langle a $	<code>\ket[1]</code>	<code>\ket{b}</code>	$ b\rangle$	<code>\braket[2]</code>	<code>\braket{a}{b}</code>	$\langle a b\rangle$
-----	----------------------	----------------------	--------------	----------------------	----------------------	-------------	-------------------------	----------------------------	----------------------

## 530 C.4 Units

531	<code>\unit[1]</code>	<code>\unit{kg}</code>	kg
-----	-----------------------	------------------------	----

### 532 C.4.1 Energy and momentum

533	<code>\tev</code>	TeV	<code>\gev</code>	GeV	<code>\mev</code>	MeV
	<code>\kev</code>	keV	<code>\ev</code>	eV	<code>\gevc</code>	GeV/c
	<code>\mevc</code>	MeV/c	<code>\gevcc</code>	GeV/c <sup>2</sup>	<code>\gevgevcccc</code>	GeV <sup>2</sup> /c <sup>4</sup>
	<code>\mevcc</code>	MeV/c <sup>2</sup>				

### 534 C.4.2 Distance and area

535	<code>\km</code>	km	<code>\m</code>	m	<code>\ma</code>	m <sup>2</sup>
	<code>\cm</code>	cm	<code>\cma</code>	cm <sup>2</sup>	<code>\mm</code>	mm
	<code>\mma</code>	mm <sup>2</sup>	<code>\mum</code>	μm	<code>\muma</code>	μm <sup>2</sup>
	<code>\nm</code>	nm	<code>\fm</code>	fm	<code>\barn</code>	b
	<code>\mbarn</code>	mb	<code>\mub</code>	μb	<code>\nb</code>	nb
	<code>\invnb</code>	nb <sup>-1</sup>	<code>\pb</code>	pb	<code>\invpb</code>	pb <sup>-1</sup>
	<code>\fb</code>	fb	<code>\invfb</code>	fb <sup>-1</sup>	<code>\ab</code>	ab
	<code>\invab</code>	ab <sup>-1</sup>				

### 536 C.4.3 Time

537	<code>\sec</code>	s	<code>\ms</code>	ms	<code>\mus</code>	μs
	<code>\ns</code>	ns	<code>\ps</code>	ps	<code>\fs</code>	fs
	<code>\mhz</code>	MHz	<code>\khz</code>	kHz	<code>\hz</code>	Hz
	<code>\invps</code>	ps <sup>-1</sup>	<code>\invns</code>	ns <sup>-1</sup>	<code>\yr</code>	yr
	<code>\hr</code>	hr				

### 538 C.4.4 Temperature

539	<code>\degc</code>	°C	<code>\degk</code>	K
-----	--------------------	----	--------------------	---

#### 540 C.4.5 Material lengths, radiation

	<code>\Xrad</code>	$X_0$		<code>\NIL</code>	$\lambda_{int}$		<code>\mip</code>	MIP
541	<code>\neutroneq</code>	$n_{eq}$		<code>\neqcmcm</code>	$n_{eq}/\text{cm}^2$		<code>\kRad</code>	kRad
	<code>\MRad</code>	MRad		<code>\ci</code>	Ci		<code>\mci</code>	mCi

#### 542 C.4.6 Uncertainties

	<code>\sx</code>	$\sigma_x$		<code>\sy</code>	$\sigma_y$		<code>\sz</code>	$\sigma_z$
543	<code>\stat</code>	(stat)		<code>\syst</code>	(syst)			

#### 544 C.4.7 Maths

	<code>\order</code>	$\mathcal{O}$		<code>\chisq</code>	$\chi^2$		<code>\chisqndf</code>	$\chi^2/\text{ndf}$
	<code>\chisqip</code>	$\chi_{IP}^2$		<code>\chisqvs</code>	$\chi_{VS}^2$		<code>\chisqvtx</code>	$\chi_{vtx}^2$
	<code>\chisqvtxndf</code>	$\chi_{vtx}^2/\text{ndf}$		<code>\deriv</code>	d		<code>\gsim</code>	$\gtrsim$
545	<code>\lsim</code>	$\lesssim$		<code>\mean[1]</code>	$\langle x \rangle$		<code>\abs[1]</code>	$\ x\ $
	<code>\Real</code>	$\mathcal{Re}$		<code>\Imag</code>	$\mathcal{Im}$		<code>\PDF</code>	PDF
	<code>\sPlot</code>	$sPlot$						

### 546 C.5 Kinematics

#### 547 C.5.1 Energy, Momenta

	<code>\Ebeam</code>	$E_{\text{BEAM}}$		<code>\sqs</code>	$\sqrt{s}$		<code>\ptot</code>	$p$
548	<code>\pt</code>	$p_T$		<code>\et</code>	$E_T$		<code>\mt</code>	$M_T$
	<code>\dpp</code>	$\Delta p/p$		<code>\msq</code>	$m^2$		<code>\dedx</code>	$dE/dx$

#### 549 C.5.2 PID

	<code>\dllkpi</code>	$DLL_{K\pi}$		<code>\dllppi</code>	$DLL_{p\pi}$		<code>\dllepi</code>	$DLL_{e\pi}$
550	<code>\dllmupi</code>	$DLL_{\mu\pi}$						

#### 551 C.5.3 Geometry

	<code>\degrees</code>	$^\circ$		<code>\krad</code>	krad		<code>\mrad</code>	mrad
552	<code>\rad</code>	rad						

#### 553 C.5.4 Accelerator

554	<code>\betastar</code>	$\beta^*$		<code>\lum</code>	$\mathcal{L}$		<code>\intlum[1]</code>	$\int \mathcal{L} = 2 \text{ fb}^{-1}$
-----	------------------------	-----------	--	-------------------	---------------	--	-------------------------	--

## 555 C.6 Software

### 556 C.6.1 Programs

\bcveppy	BCVEGPY	\boole	BOOLE	\brunel	BRUNEL
\davinci	DAVINCI	\dirac	DIRAC	\evtgen	EVTGEN
\fewz	FEWZ	\fluka	FLUKA	\ganga	GANGA
\gaudi	GAUDI	\gauss	GAUSS	\geant	GEANT4
557 \hepmc	HEPMC	\herwig	HERWIG	\moore	MOORE
\neurobayes	NEUROBAYES	\photos	PHOTOS	\powheg	POWHEG
\pythia	PYTHIA	\resbos	RESBOS	\roofit	ROOTFIT
\root	ROOT	\spice	SPICE	\urania	URANIA

### 558 C.6.2 Languages

\cpp	C++	\ruby	RUBY	\fortran	FORTRAN
559 \svn	SVN				

### 560 C.6.3 Data processing

\kbytes	kbytes	\kbsps	kbits/s	\kbits	kbits
\kbsps	kbits/s	\mbps	Mbytes/s	\mbytes	Mbytes
561 \mbps	Mbyte/s	\mbps	Mbytes/s	\gbsps	Gbytes/s
\gbytes	Gbytes	\gbsps	Gbytes/s	\tbytes	Tbytes
\tbp	Tbytes/yr	\dst	DST		

## 562 C.7 Detector related

### 563 C.7.1 Detector technologies

\nonn	$n^+$ -on- $n$	\ponn	$p^+$ -on- $n$	\nonp	$n^+$ -on- $p$
564 \cud	CUD	\mwpc	MWPC	\gem	GEM

### 565 C.7.2 Detector components, electronics

\tell1	TELL1	\ukl1	UKL1	\beetle	Beetle
\otis	OTIS	\croc	CROC	\carioca	CARIOCA
\dialog	DIALOG	\sync	SYNC	\cardiac	CARDIAC
\gol	GOL	\vcsl	VCSEL	\ttc	TTC
\ttcrx	TTCrx	\hpd	HPD	\pmt	PMT
566 \specs	SPECS	\elmb	ELMB	\fpga	FPGA
\plc	PLC	\rasnik	RASNIK	\elmb	ELMB
\can	CAN	\lvds	LVDS	\ntc	NTC
\adc	ADC	\led	LED	\ccd	CCD
\hv	HV	\lv	LV	\pvss	PVSS
\cmos	CMOS	\fifo	FIFO	\ccpc	CCPC

### 567 C.7.3 Chemical symbols

\cfourften	C <sub>4</sub> F <sub>10</sub>	\cffour	CF <sub>4</sub>	\cotwo	CO <sub>2</sub>
568 \csixffoutteen	C <sub>6</sub> F <sub>14</sub>	\mgftwo	MgF <sub>2</sub>	\sio two	SiO <sub>2</sub>

## C.8 Special Text

<code>\eg</code>	<i>e.g.</i>	<code>\ie</code>	<i>i.e.</i>	<code>\etal</code>	<i>et al.</i>
<code>\etc</code>	<i>etc.</i>	<code>\cf</code>	<i>cf.</i>	<code>\ffp</code>	<i>ff.</i>
<code>\vs</code>	<i>vs.</i>				

## References

- [1] LHCb collaboration, A. A. Alves Jr. *et al.*, *The LHCb detector at the LHC*, JINST **3** (2008) S08005.
- [2] American Physical Society, *APS REVTeX package*, <https://journals.aps.org/revtex>.
- [3] Particle Data Group, K. A. Olive *et al.*, *Review of particle physics*, Chin. Phys. **C38** (2014) 090001, and 2015 update.
- [4] LHCb collaboration, R. Aaij *et al.*, *LHCb detector performance*, Int. J. Mod. Phys. **A30** (2015) 1530022, [arXiv:1412.6352](#).
- [5] R. Aaij *et al.*, *Performance of the LHCb Vertex Locator*, JINST **9** (2014) P09007, [arXiv:1405.7808](#).
- [6] R. Arink *et al.*, *Performance of the LHCb Outer Tracker*, JINST **9** (2014) P01002, [arXiv:1311.3893](#).
- [7] M. Adinolfi *et al.*, *Performance of the LHCb RICH detector at the LHC*, Eur. Phys. J. **C73** (2013) 2431, [arXiv:1211.6759](#).
- [8] A. A. Alves Jr. *et al.*, *Performance of the LHCb muon system*, JINST **8** (2013) P02022, [arXiv:1211.1346](#).
- [9] R. Aaij *et al.*, *The LHCb trigger and its performance in 2011*, JINST **8** (2013) P04022, [arXiv:1211.3055](#).
- [10] A. Puig, *The LHCb trigger in 2011 and 2012*, LHCb-PUB-2014-046.
- [11] V. V. Gligorov and M. Williams, *Efficient, reliable and fast high-level triggering using a bonsai boosted decision tree*, JINST **8** (2013) P02013, [arXiv:1210.6861](#).
- [12] LHCb collaboration, R. Aaij *et al.*, *Differential branching fractions and isospin asymmetries of  $B \rightarrow K^{(*)}\mu^+\mu^-$  decays*, JHEP **06** (2014) 133, [arXiv:1403.8044](#).
- [13] T. Sjöstrand, S. Mrenna, and P. Skands, *PYTHIA 6.4 physics and manual*, JHEP **05** (2006) 026, [arXiv:hep-ph/0603175](#); T. Sjöstrand, S. Mrenna, and P. Skands, *A brief introduction to PYTHIA 8.1*, Comput. Phys. Commun. **178** (2008) 852, [arXiv:0710.3820](#).
- [14] I. Belyaev *et al.*, *Handling of the generation of primary events in Gauss, the LHCb simulation framework*, J. Phys. Conf. Ser. **331** (2011) 032047.
- [15] D. J. Lange, *The EvtGen particle decay simulation package*, Nucl. Instrum. Meth. **A462** (2001) 152.

- [16] P. Golonka and Z. Was, *PHOTOS Monte Carlo: A precision tool for QED corrections in Z and W decays*, Eur. Phys. J. **C45** (2006) 97, [arXiv:hep-ph/0506026](#).
- [17] Geant4 collaboration, J. Allison *et al.*, *Geant4 developments and applications*, IEEE Trans. Nucl. Sci. **53** (2006) 270; Geant4 collaboration, S. Agostinelli *et al.*, *Geant4: A simulation toolkit*, Nucl. Instrum. Meth. **A506** (2003) 250.
- [18] M. Clemencic *et al.*, *The LHCb simulation application, Gauss: Design, evolution and experience*, J. Phys. Conf. Ser. **331** (2011) 032023.
- [19] L. Breiman, J. H. Friedman, R. A. Olshen, and C. J. Stone, *Classification and regression trees*, Wadsworth international group, Belmont, California, USA, 1984.
- [20] R. E. Schapire and Y. Freund, *A decision-theoretic generalization of on-line learning and an application to boosting*, J. Comput. Syst. Sci. **55** (1997) 119.
- [21] A. Feder, *Your BibTeX resource*, <http://www.bibtex.org/>.
- [22] E. Majorana, *Teoria simmetrica dell'elettrone e del positrone*, Nuovo Cim. **14** (1937) 171.
- [23] M. Shell, *Mciteplus: Enhanced multicitations*, <http://www.michaelshell.org/tex/mciteplus/>.
- [24] R. N. Mohapatra and G. Senjanovic, *Neutrino Mass and Spontaneous Parity Violation*, Phys. Rev. Lett. **44** (1980) 912; S. Pascoli and S. T. Petcov, *Majorana neutrinos, neutrino mass spectrum and the  $|\langle m \rangle| \sim 10^{-3}$  eV frontier in neutrinoless double beta decay*, Phys. Rev. **D77** (2008) 113003, [arXiv:0711.4993](#).
- [25] LHCb collaboration, *Optimization and calibration of the LHCb flavour tagging performance using 2010 data*, LHCb-CONF-2011-003.
- [26] J. Dickens, *A measurement of the photon efficiency from the 2010 data*, LHCb-INT-2011-047; C. Adrover *et al.*, *Searches for  $B_s^0 \rightarrow \mu^+\mu^-$  and  $B^0 \rightarrow \mu^+\mu^-$  in  $370\text{ pb}^{-1}$  at LHCb*, LHCb-ANA-2011-078; P. Owen, *Measurement of branching fractions, isospin asymmetries and angular observables in exclusive electroweak penguin decays*, CERN-THESIS-2014-057; P. Perret, *First Years of Running for the LHCb Calorimeter system*, LHCb-PROC-2014-017; U. Egede, *Future of heavy flavour physics*, LHCb-TALK-2014-257.
- [27] LHCb collaboration, R. Aaij *et al.*, *Measurement of charged particle multiplicities and densities in pp collisions at  $\sqrt{s} = 7$  TeV in the forward region*, Eur. Phys. J. **C74** (2014) 2888, [arXiv:1402.4430](#).
- [28] LHCb collaboration, R. Aaij *et al.*, *Observation of the decay  $B_s^0 \rightarrow \bar{D}^0 \phi$* , Phys. Lett. **B727** (2013) 403, [arXiv:1308.4583](#).
- [29] LHCb collaboration, R. Aaij *et al.*, *Observation of  $J/\psi$  resonances consistent with pentaquark states in  $\Lambda_b^0 \rightarrow J/\psi p K^-$  decays*, Phys. Rev. Lett. **115** (2015) 072001, [arXiv:1507.03414](#).

- [30] Heavy Flavor Averaging Group, Y. Amhis *et al.*, *Averages of  $b$ -hadron,  $c$ -hadron, and  $\tau$ -lepton properties as of summer 2014*, [arXiv:1412.7515](https://arxiv.org/abs/1412.7515), updated results and plots available at <http://www.slac.stanford.edu/xorg/hfag/>.
- [31] A. Tsaregorodtsev *et al.*, *DIRAC3: The new generation of the LHCb grid software*, J. Phys. Conf. Ser. **219** (2010) 062029; R. Graciani Diaz *et al.*, *Belle-DIRAC setup for using Amazon Elastic Compute Cloud*, Journal of Grid Computing **9** (2011) 65.
- [32] T. Skwarnicki, *A study of the radiative cascade transitions between the Upsilon-prime and Upsilon resonances*, PhD thesis, Institute of Nuclear Physics, Krakow, 1986, DESY-F31-86-02.
- [33] S. S. Wilks, *The large-sample distribution of the likelihood ratio for testing composite hypotheses*, Ann. Math. Stat. **9** (1938) 60.
- [34] W. D. Hulsbergen, *Decay chain fitting with a Kalman filter*, Nucl. Instrum. Meth. **A552** (2005) 566, [arXiv:physics/0503191](https://arxiv.org/abs/physics/0503191).
- [35] M. Pivk and F. R. Le Diberder, *sPlot: A statistical tool to unfold data distributions*, Nucl. Instrum. Meth. **A555** (2005) 356, [arXiv:physics/0402083](https://arxiv.org/abs/physics/0402083).
- [36] G. Punzi, *Sensitivity of searches for new signals and its optimization*, in *Statistical Problems in Particle Physics, Astrophysics, and Cosmology* (L. Lyons, R. Mount, and R. Reitmeyer, eds.), p. 79, 2003. [arXiv:physics/0308063](https://arxiv.org/abs/physics/0308063).
- [37] LHCb collaboration, R. Aaij *et al.*, *Measurement of the fragmentation fraction ratio  $f_s/f_d$  and its dependence on  $B$  meson kinematics*, JHEP **04** (2013) 001, [arXiv:1301.5286](https://arxiv.org/abs/1301.5286),  $f_s/f_d$  value updated in LHCb-CONF-2013-011.
- [38] R. Aaij *et al.*, *Tesla: an application for real-time data analysis in High Energy Physics*, [arXiv:1604.05596](https://arxiv.org/abs/1604.05596).
- [39] R. Aaij *et al.*, *Performance of the LHCb calorimeters*, LHCb-DP-2013-004, in preparation.
- [40] LHCb collaboration, R. Aaij *et al.*, *Measurement of the track reconstruction efficiency at LHCb*, JINST **10** (2015) P02007, [arXiv:1408.1251](https://arxiv.org/abs/1408.1251).
- [41] F. Archilli *et al.*, *Performance of the muon identification at LHCb*, JINST **8** (2013) P10020, [arXiv:1306.0249](https://arxiv.org/abs/1306.0249).
- [42] A. Affolder *et al.*, *Radiation damage in the LHCb vertex locator*, JINST **8** (2013) P08002, [arXiv:1302.5259](https://arxiv.org/abs/1302.5259).
- [43] D. van Eijk *et al.*, *Radiation hardness of the LHCb Outer Tracker*, Nucl. Instrum. Meth. **A685** (2012) 62.
- [44] R. B. Appleby *et al.*, *Simulation of machine induced background in the LHCb experiment: methodology and implementation*, IEEE Trans. Nucl. Sci. **59** (2012) 1681.



- [45] M. Anelli *et al.*, *Performance of the LHCb muon system with cosmic rays*, JINST **5** (2010) P10003, [arXiv:1009.1963](#).
- [46] S. Borghi *et al.*, *First spatial alignment of the LHCb VELO and analysis of beam absorber collision data*, Nucl. Instrum. Meth. **A618** (2010) 108.
- [47] LHCb collaboration, *LHCb Trigger and Online Technical Design Report*, CERN-LHCC-2014-016. LHCb-TDR-016.
- [48] LHCb collaboration, *LHCb Tracker Upgrade Technical Design Report*, CERN-LHCC-2014-001. LHCb-TDR-015.
- [49] LHCb collaboration, *LHCb PID Upgrade Technical Design Report*, CERN-LHCC-2013-022. LHCb-TDR-014.
- [50] LHCb collaboration, *LHCb VELO Upgrade Technical Design Report*, CERN-LHCC-2013-021. LHCb-TDR-013.
- [51] LHCb collaboration, *Framework TDR for the LHCb Upgrade: Technical Design Report*, CERN-LHCC-2012-007. LHCb-TDR-012.
- [52] LHCb collaboration, *LHCb computing: Technical Design Report*, CERN-LHCC-2005-019. LHCb-TDR-011.
- [53] LHCb collaboration, *LHCb trigger system: Technical Design Report*, CERN-LHCC-2003-031. LHCb-TDR-010.
- [54] LHCb collaboration, *LHCb reoptimized detector design and performance: Technical Design Report*, CERN-LHCC-2003-030. LHCb-TDR-009.
- [55] LHCb collaboration, *LHCb inner tracker: Technical Design Report*, CERN-LHCC-2002-029. LHCb-TDR-008.
- [56] LHCb collaboration, *LHCb online system, data acquisition and experiment control: Technical Design Report*, CERN-LHCC-2001-040. LHCb-TDR-007.
- [57] LHCb collaboration, *LHCb outer tracker: Technical Design Report*, CERN-LHCC-2001-024. LHCb-TDR-006.
- [58] LHCb collaboration, *LHCb VELO (VERTex LOcator): Technical Design Report*, CERN-LHCC-2001-011. LHCb-TDR-005.
- [59] LHCb collaboration, *LHCb muon system: Technical Design Report*, CERN-LHCC-2001-010. LHCb-TDR-004.
- [60] LHCb collaboration, *LHCb RICH: Technical Design Report*, CERN-LHCC-2000-037. LHCb-TDR-003.
- [61] LHCb collaboration, *LHCb calorimeters: Technical Design Report*, CERN-LHCC-2000-036. LHCb-TDR-002.
- [62] LHCb collaboration, *LHCb magnet: Technical Design Report*, CERN-LHCC-2000-007. LHCb-TDR-001.

- [63] LHCb collaboration, R. Aaij *et al.*, *First observation of  $B^+ \rightarrow J/\psi 3\pi^+ 2\pi^-$  and  $B^+ \rightarrow \psi(2S)\pi^+\pi^+\pi^-$  decays*, LHCb-PAPER-2016-040, in preparation.
- [64] LHCb collaboration, R. Aaij *et al.*, *New algorithms to tag the flavour of  $B^0$  mesons using pions and protons*, LHCb-PAPER-2016-039, in preparation.
- [65] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $t\bar{t}$ ,  $W + b\bar{b}$  and  $W + c\bar{c}$  production cross sections in  $pp$  collisions at  $\sqrt{s} = 8$  TeV*, LHCb-PAPER-2016-038, in preparation.
- [66] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  violation in  $B \rightarrow D^+ D^-$  decays*, LHCb-PAPER-2016-037, in preparation.
- [67] LHCb collaboration, R. Aaij *et al.*, *Observation of the annihilation decay mode  $B^0 \rightarrow K^+ K^-$* , LHCb-PAPER-2016-036, in preparation.
- [68] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  asymmetry in  $D^0 \rightarrow K^- K^+$  decays*, LHCb-PAPER-2016-035, in preparation.
- [69] LHCb collaboration, R. Aaij *et al.*, *First measurement of the photon polarization in radiative  $B_s^0$  decays*, LHCb-PAPER-2016-034, in preparation.
- [70] LHCb collaboration, R. Aaij *et al.*, *Measurement of mixing and  $CP$  violation using  $D^0 \rightarrow K^\pm \pi^\mp$  decays from the  $\bar{B} \rightarrow \mu^- D^{*+} (D^0 \pi^+) X$  decay chain*, LHCb-PAPER-2016-033, in preparation.
- [71] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $CKM$  angle  $\gamma$  from a combination of tree-level LHCb analyses*, LHCb-PAPER-2016-032, in preparation.
- [72] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $b$ -quark production cross-section in 7 and 13 TeV  $pp$  collisions*, LHCb-PAPER-2016-031, in preparation.
- [73] LHCb collaboration, R. Aaij *et al.*, *Probing matter-antimatter asymmetries in  $\Lambda_b^0$ -baryon decays*, LHCb-PAPER-2016-030, in preparation.
- [74] LHCb collaboration, R. Aaij *et al.*, *Search for structure in the  $B_s^0 \pi^\pm$  invariant mass spectrum*, arXiv:1608.00435, submitted to PRL.
- [75] LHCb collaboration, R. Aaij *et al.*, *Observation of the decays  $B_s^0 \rightarrow \phi \pi^+ \pi^-$  and  $B^0 \rightarrow \phi \pi^+ \pi^-$* , LHCb-PAPER-2016-028, in preparation.
- [76] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $CP$  violating phase and decay-width difference in  $B_s^0 \rightarrow \psi(2S)\phi$  decays*, LHCb-PAPER-2016-027, in preparation.
- [77] LHCb collaboration, R. Aaij *et al.*, *Amplitude analysis of  $B^- \rightarrow D^+ \pi^- \pi^-$  decays*, arXiv:1608.01289, submitted to Phys. Rev. D.
- [78] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay  $B^0 \rightarrow K^+ \pi^- \mu^+ \mu^-$  in the  $K^*(1430)$  region*, LHCb-PAPER-2016-025, in preparation.
- [79] LHCb collaboration, R. Aaij *et al.*, *Measurement of forward  $W \rightarrow e\nu$  production in  $pp$  collisions at  $\sqrt{s} = 8$  TeV*, arXiv:1608.01484, submitted to JHEP.

- [80] LHCb collaboration, R. Aaij *et al.*, *Search for the suppressed decays  $B^+ \rightarrow K^+ K^+ \pi^-$  and  $B^+ \rightarrow \pi + \pi^+ K^-$* , [arXiv:1608.01478](#), submitted to Phys. Lett. B.
- [81] LHCb collaboration, R. Aaij *et al.*, *Study of  $B_c^+$  decays to the  $K^+ K^- \pi^+$  final state and evidence for the decay  $B_c^+ \rightarrow \chi_{c0} \pi^+$* , [arXiv:1607.06134](#), submitted to PRL.
- [82] LHCb collaboration, R. Aaij *et al.*, *Measurement of the forward  $Z$  boson production cross-section in  $pp$  collisions at  $\sqrt{s} = 13$  TeV*, [arXiv:1607.06495](#), submitted to JHEP.
- [83] LHCb collaboration, R. Aaij *et al.*, *Measurement of the ratio of branching fractions  $\mathcal{B}(B_c^+ \rightarrow J/\psi K^+)/\mathcal{B}(B_c^+ \rightarrow J/\psi \pi^+)$* , [arXiv:1607.06823](#), submitted to JHEP.
- [84] LHCb collaboration, R. Aaij *et al.*, *Amplitude analysis of  $B^+ \rightarrow J/\psi \phi K^+$  decays*, [arXiv:1606.07898](#), submitted to PRD.
- [85] LHCb collaboration, R. Aaij *et al.*, *Observation of exotic  $J/\psi \phi$  structures from amplitude analysis of  $B^+ \rightarrow J/\psi \phi K^+$  decays*, [arXiv:1606.07895](#), submitted to Phys. Rev. Lett.
- [86] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_s^0 \rightarrow J/\psi \eta$  lifetime*, [arXiv:1607.06314](#), submitted to Phys. Lett. B.
- [87] LHCb collaboration, R. Aaij *et al.*, *Observation of  $\eta_c(2S) \rightarrow p\bar{p}$  and search for  $X(3872) \rightarrow p\bar{p}$  decays*, [arXiv:1607.06446](#), in preparation.
- [88] LHCb collaboration, R. Aaij *et al.*, *Evidence for exotic hadron contributions to  $\Lambda_b^0 \rightarrow J/\psi p \pi^-$  decays*, [arXiv:1606.06999](#), to appear in Phys. Rev. Lett.
- [89] LHCb collaboration, R. Aaij *et al.*, *Search for Higgs-like boson decaying into pair of long-lived particles*, LHCb-PAPER-2016-014, in preparation.
- [90] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $CP$  asymmetry in  $B_s^0 - \bar{B}_s^0$  mixing*, Phys. Rev. Lett. **117** (2016) 061803, [arXiv:1605.09768](#).
- [91] LHCb collaboration, R. Aaij *et al.*, *Measurement 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*, [arXiv:1606.04731](#), submitted to JHEP.
- [92] LHCb collaboration, R. Aaij *et al.*, *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, [arXiv:1605.00951](#).
- [93] LHCb collaboration, R. Aaij *et al.*, *Measurement of the properties of the  $\Xi_b^{*0}$  baryon*, JHEP **05** (2016) 161, [arXiv:1604.03896](#).
- [94] LHCb collaboration, R. Aaij *et al.*, *Model-independent evidence for  $J/\psi p$  contributions to  $\Lambda_b \rightarrow J/\psi p K^-$  decays*, [arXiv:1604.05708](#), to appear in Phys. Rev. Lett.
- [95] LHCb collaboration, R. Aaij *et al.*, *Measurements of the mass and lifetime of the  $\Omega_b^-$  baryon*, Phys. Rev. **D93** (2016) 092007, [arXiv:1604.01412](#).

- [96] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CKM angle  $\gamma$  using  $B^0 \rightarrow DK^{*0}$  with  $D \rightarrow K_S^0 \pi^+ \pi^-$  decays*, arXiv:1605.01082, to appear in JHEP.
- [97] LHCb collaboration, R. Aaij *et al.*, *Model-independent measurement of the CKM angle  $\gamma$  using  $B^0 \rightarrow DK^{*0}$  decays with  $D \rightarrow K_S^0 \pi^+ \pi^-$  and  $K_S^0 K^+ K^-$* , arXiv:1604.01525, to appear in JHEP.
- [98] LHCb collaboration, R. Aaij *et al.*, *Search for violations of Lorentz invariance and CPT symmetry in  $B_{(s)}^0$  mixing*, Phys. Rev. Lett. **116** (2016) 241601, arXiv:1603.04804.
- [99] LHCb collaboration, R. Aaij *et al.*, *Observations of  $\Lambda_b^0 \rightarrow \Lambda K^+ \pi^-$  and  $\Lambda_b^0 \rightarrow \Lambda K^+ K^-$  decays and searches for other  $\Lambda_b^0$  and  $\Xi_b^0$  decays to  $\Lambda h^+ h^-$  final states*, JHEP **05** (2016) 081, arXiv:1603.00413.
- [100] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP observables in  $B^\pm \rightarrow DK^\pm$  and  $B^\pm \rightarrow D\pi^\pm$  with two- and four-body D meson decays*, Phys. Lett. **B760** (2016) 117, arXiv:1603.08993.
- [101] LHCb collaboration, R. Aaij *et al.*, *Observation of the  $\Lambda_b \rightarrow \Lambda \phi$  decay*, Phys. Lett. **B759** (2016) 282, arXiv:1603.02870.
- [102] LHCb collaboration, R. Aaij *et al.*, *Search for  $B_c$  decays to the  $p\bar{p}\pi$  final state*, Phys. Lett. **B759** (2016) 313, arXiv:1603.07037.
- [103] LHCb collaboration, R. Aaij *et al.*, *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  $\Lambda_b^0$  baryon mass*, JHEP **05** (2016) 132, arXiv:1603.06961.
- [104] LHCb collaboration, R. Aaij *et al.*, *Constraints on the unitarity triangle angle  $\gamma$  from Dalitz plot analysis of  $B^0 \rightarrow DK^+\pi^-$  decays*, Phys. Rev. **D93** (2016) 112018, arXiv:1602.03455.
- [105] LHCb collaboration, R. Aaij *et al.*, *Study of  $\psi(2S)$  production cross-sections and cold nuclear matter effects in pPb collisions at  $\sqrt{s_{NN}} = 5$  TeV*, JHEP **03** (2016) 133, arXiv:1601.07878.
- [106] LHCb collaboration, R. Aaij *et al.*, *First observation of  $D^0 - \bar{D}^0$  oscillations in  $D^0 \rightarrow K^+ \pi^+ \pi^- \pi^-$  decays and a measurement of the associated coherence parameters*, Phys. Rev. Lett. **116** (2016) 241801, arXiv:1602.07224.
- [107] LHCb collaboration, R. Aaij *et al.*, *Neural-network-based same side kaon tagging algorithm calibrated with  $B_s^0 \rightarrow D_s^- \pi^+$  and  $B_{s2}^*(5840)^0 \rightarrow B^+ K^-$  decays*, JINST **11** (2016) P05010, arXiv:1602.07252.
- [108] LHCb collaboration, R. Aaij *et al.*, *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) 191601, arXiv:1602.03160.
- [109] LHCb collaboration, R. Aaij *et al.*, *First observation of the rare  $B^+ \rightarrow D^+ K^+ \pi^-$  decay*, Phys. Rev. **D93** (2016) 051101(R), Erratum ibid. **D93** (2016) 119902, arXiv:1512.02494.

- [110] LHCb collaboration, R. Aaij *et al.*, *Measurement of the inclusive  $B_s^0 \rightarrow D_s^{(*)+} D_s^{(*)-}$  branching fraction*, Phys. Rev. **D93** (2016) 092008, [arXiv:1602.07543](#).
- [111] LHCb collaboration, R. Aaij *et al.*, *Study of  $D_{sJ}^+$  mesons decaying to  $D^{*+} K_S^0$  and  $D^{*0} K^+$  final states*, JHEP **02** (2016) 133, [arXiv:1601.01495](#).
- [112] LHCb collaboration, R. Aaij *et al.*, *Angular analysis of the  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  decay using  $3 \text{ fb}^{-1}$  of integrated luminosity*, JHEP **02** (2016) 104, [arXiv:1512.04442](#).
- [113] LHCb collaboration, R. Aaij *et al.*, *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) 161802, [arXiv:1603.02408](#).
- [114] LHCb collaboration, R. Aaij *et al.*, *Measurement of forward  $W$  and  $Z$  boson production in  $pp$  collisions at  $\sqrt{s} = 8 \text{ TeV}$* , JHEP **01** (2016) 155, [arXiv:1511.08039](#).
- [115] LHCb collaboration, R. Aaij *et al.*, *Search for the lepton-flavour violating decay  $D^0 \rightarrow e^\pm \mu^\mp$* , Phys. Lett. **B754** (2016) 167, [arXiv:1512.00322](#).
- [116] LHCb collaboration, R. Aaij *et al.*, *Evidence for the strangeness-changing weak decay  $\Xi_b^- \rightarrow \Lambda_b^0 \pi^-$* , Phys. Rev. Lett. **115** (2015) 241801, [arXiv:1510.03829](#).
- [117] LHCb collaboration, R. Aaij *et al.*, *Production of associated  $\Upsilon$  and open charm hadrons in  $pp$  collisions at  $\sqrt{s} = 7$  and  $8 \text{ TeV}$  via double parton scattering*, JHEP **07** (2016) 052, [arXiv:1510.05949](#).
- [118] LHCb collaboration, R. Aaij *et al.*, *Forward production of  $\Upsilon$  mesons in  $pp$  collisions at  $\sqrt{s} = 7$  and  $8 \text{ TeV}$* , JHEP **11** (2015) 103, [arXiv:1509.02372](#).
- [119] LHCb collaboration, R. Aaij *et al.*, *Search for the decays  $B^0 \rightarrow J/\psi \gamma$  and  $B_s^0 \rightarrow J/\psi \gamma$* , Phys. Rev. **D92** (2015) 112002, [arXiv:1510.04866](#).
- [120] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $D^0 \rightarrow K^- \pi^+ \mu^+ \mu^-$  in the  $\rho^0 - \omega$  region of the dimuon mass spectrum*, Phys. Lett. **B757** (2016) 558, [arXiv:1510.08367](#).
- [121] LHCb collaboration, R. Aaij *et al.*, *Model-independent measurement of mixing parameters in  $D^0 \rightarrow K_S^0 \pi^+ \pi^-$  decays*, JHEP **04** (2016) 033, [arXiv:1510.01664](#).
- [122] LHCb collaboration, R. Aaij *et al.*, *Measurements of prompt charm production cross-sections in  $pp$  collisions at  $\sqrt{s} = 13 \text{ TeV}$* , JHEP **03** (2016) 159, [arXiv:1510.01707](#).
- [123] LHCb collaboration, R. Aaij *et al.*, *Measurement of two-particle correlations in proton-ion collisions at  $\sqrt{s_{NN}} = 5 \text{ TeV}$* , [arXiv:1512.00439](#), to appear in Phys.Lett.B.
- [124] LHCb collaboration, R. Aaij *et al.*, *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, [arXiv:1509.07645](#).
- [125] LHCb collaboration, R. Aaij *et al.*, *A model-independent confirmation of the  $Z(4430)^-$  state*, Phys. Rev. **D92** (2015) 112009, [arXiv:1510.01951](#).

- [126] LHCb collaboration, R. Aaij *et al.*, *Measurement of forward  $J/\psi$  production cross-sections in  $pp$  collisions at  $\sqrt{s} = 13$  TeV*, JHEP **10** (2015) 172, arXiv:1509.00771.
- [127] LHCb collaboration, R. Aaij *et al.*, *Search for hidden-sector bosons in  $B^0 \rightarrow K^{*0}\mu^+\mu^-$  decays*, Phys. Rev. Lett. **115** (2015) 161802, arXiv:1508.04094.
- [128] LHCb collaboration, R. Aaij *et al.*, *First measurement of the differential branching fraction and CP asymmetry of the  $B^+ \rightarrow \pi^+\mu^+\mu^-$  decay*, JHEP **10** (2015) 034, arXiv:1509.00414.
- [129] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation parameters and polarisation fractions in  $B_s^0 \rightarrow J/\psi\bar{K}^{*0}$  decays*, JHEP **11** (2015) 082, arXiv:1509.00400.
- [130] LHCb collaboration, R. Aaij *et al.*, *Observation of the  $B_s \rightarrow J/\psi\phi\phi$  decay*, JHEP **03** (2016) 040, arXiv:1601.05284.
- [131] LHCb collaboration, R. Aaij *et al.*, *Study of the productions of  $\Lambda_b^0$  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) 011001, arXiv:1509.00292.
- [132] LHCb collaboration, R. Aaij *et al.*, *A precise measurement of the  $B^0$  meson oscillation frequency*, Eur. Phys. J. **C76** (2016) 412, arXiv:1604.03475.
- [133] LHCb collaboration, R. Aaij *et al.*, *Measurement of the time-integrated CP asymmetry in  $D^0 \rightarrow K_S^0 K_S^0$  decays*, JHEP **10** (2015) 055, arXiv:1508.06087.
- [134] LHCb collaboration, R. Aaij *et al.*, *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, arXiv:1508.00788.
- [135] LHCb collaboration, R. Aaij *et al.*, *B flavour tagging using charm decays at the LHCb experiment*, JINST **10** (2015) P10005, arXiv:1507.07892.
- [136] LHCb collaboration, R. Aaij *et al.*, *Studies of the resonance structure in  $D^0 \rightarrow K_S^0 K^\pm \pi^\mp$  decays*, Phys. Rev. **D93** (2016) 052018, arXiv:1509.06628.
- [137] LHCb collaboration, R. Aaij *et al.*, *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) 111803, arXiv:1506.08614.
- [138] LHCb collaboration, R. Aaij *et al.*, *Measurement of the branching fraction ratio  $\mathcal{B}(B_c^+ \rightarrow \psi(2S)\pi^+)/\mathcal{B}(B_c^+ \rightarrow J/\psi\pi^+)$* , Phys. Rev. **D92** (2015) 057007, arXiv:1507.03516.
- [139] LHCb collaboration, R. Aaij *et al.*, *Angular analysis and differential branching fraction of the decay  $B_s^0 \rightarrow \phi\mu^+\mu^-$* , JHEP **09** (2015) 179, arXiv:1506.08777.
- [140] LHCb collaboration, R. Aaij *et al.*, *First observation of top quark production in the forward region*, Phys. Rev. Lett. **115** (2015) 112001, arXiv:1506.00903.
- [141] LHCb collaboration, R. Aaij *et al.*, *Study of W boson production in association with beauty and charm*, Phys. Rev. **D92** (2015) 052012, arXiv:1505.04051.

- [142] LHCb collaboration, R. Aaij *et al.*, *Study of  $B^- \rightarrow DK^- \pi^+ \pi^-$  and  $B^- \rightarrow D \pi^- \pi^+ \pi^-$  decays and determination of the CKM angle  $\gamma$* , Phys. Rev. **D92** (2015) 112005, [arXiv:1505.07044](#).
- [143] LHCb collaboration, R. Aaij *et al.*, *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, [arXiv:1505.03295](#).
- [144] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_s^0 \rightarrow K_S^0 K^*(892)^0$* , JHEP **01** (2016) 012, [arXiv:1506.08634](#).
- [145] LHCb collaboration, R. Aaij *et al.*, *Amplitude analysis of  $B^0 \rightarrow \bar{D}^0 K^+ \pi^-$  decays*, Phys. Rev. **D92** (2015) 012012, [arXiv:1505.01505](#).
- [146] LHCb collaboration, R. Aaij *et al.*, *Identification of beauty and charm quark jets at LHCb*, JINST **10** (2015) P06013, [arXiv:1504.07670](#).
- [147] LHCb collaboration, R. Aaij *et al.*, *Quantum numbers of the  $X(3872)$  state and orbital angular momentum in its  $\rho^0 J/\psi$  decays*, Phys. Rev. **D92** (2015) 011102(R), [arXiv:1504.06339](#).
- [148] LHCb collaboration, R. Aaij *et al.*, *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. **D91** (2015) 112014, [arXiv:1504.05442](#).
- [149] LHCb collaboration, R. Aaij *et al.*, *Determination of the quark coupling strength  $|V_{ub}|$  using baryonic decays*, Nature Physics **11** (2015) 743, [arXiv:1504.01568](#).
- [150] LHCb collaboration, R. Aaij *et al.*, *Search for the decay  $B_s^0 \rightarrow \bar{D}^0 f_0(980)$* , JHEP **08** (2015) 005, [arXiv:1505.01654](#).
- [151] LHCb collaboration, R. Aaij *et al.*, *Measurement of the exclusive  $\Upsilon(nS)$  production cross-section in pp collisions at  $\sqrt{s} = 7$  TeV and 8 TeV*, JHEP **09** (2015) 084, [arXiv:1505.08139](#).
- [152] LHCb collaboration, R. Aaij *et al.*, *Observation of the decay  $\bar{B}_s^0 \rightarrow \psi(2S) K^+ \pi^-$* , Phys. Lett. **B747** (2015) 484, [arXiv:1503.07112](#).
- [153] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of  $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$  decays*, JHEP **06** (2015) 115, [arXiv:1503.07138](#).
- [154] LHCb collaboration, R. Aaij *et al.*, *First observation and measurement of the branching fraction for the decay  $B_s^0 \rightarrow D_s^{*\mp} K^\pm$* , JHEP **06** (2015) 130, [arXiv:1503.09086](#).
- [155] LHCb collaboration, R. Aaij *et al.*, *First observation and amplitude analysis of the  $B^- \rightarrow D^+ K^- \pi^-$  decay*, Phys. Rev. **D91** (2015) 092002, Erratum *ibid.* **D93** (2016) 119901, [arXiv:1503.02995](#).
- [156] LHCb collaboration, R. Aaij *et al.*, *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. **B747** (2015) 468, [arXiv:1503.07770](#).

- [157] LHCb collaboration, R. Aaij *et al.*, *Measurement of the time-dependent CP asymmetries in  $B_s^0 \rightarrow J/\psi K_S^0$* , JHEP **06** (2015) 131, [arXiv:1503.07055](#).
- [158] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation in  $B^0 \rightarrow J/\psi K_S^0$  decays*, Phys. Rev. Lett. **115** (2015) 031601, [arXiv:1503.07089](#).
- [159] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $Z \rightarrow e^+e^-$  production at  $\sqrt{s} = 8$  TeV*, JHEP **05** (2015) 109, [arXiv:1503.00963](#).
- [160] LHCb collaboration, R. Aaij *et al.*, *Search for long-lived heavy charged particles using a ring-imaging Cherenkov technique at LHCb*, Eur. Phys. J. **C75** (2015) 595, [arXiv:1506.09173](#).
- [161] LHCb collaboration, R. Aaij *et al.*, *Measurement of the forward Z boson cross-section in pp collisions at  $\sqrt{s} = 7$  TeV*, JHEP **08** (2015) 039, [arXiv:1505.07024](#).
- [162] LHCb collaboration, R. Aaij *et al.*, *Dalitz plot analysis of  $B^0 \rightarrow \bar{D}^0 \pi^+ \pi^-$  decays*, Phys. Rev. **D92** (2015) 032002, [arXiv:1505.01710](#).
- [163] LHCb collaboration, R. Aaij *et al.*, *Measurement of indirect CP asymmetries in  $D^0 \rightarrow K^- K^+$  and  $D^0 \rightarrow \pi^- \pi^+$  decays*, JHEP **04** (2015) 043, [arXiv:1501.06777](#).
- [164] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP asymmetries and polarisation fractions in  $B_s^0 \rightarrow K^{*0} \bar{K}^{*0}$  decays*, JHEP **07** (2015) 166, [arXiv:1503.05362](#).
- [165] LHCb collaboration, R. Aaij *et al.*, *Precise measurements of the properties of the  $B_1(5721)^{0,+}$  and  $B_2^*(5747)^{0,+}$  states and observation of structure at higher invariant mass in the  $B^+ \pi^-$  and  $B^0 \pi^+$  spectra*, JHEP **04** (2015) 024, [arXiv:1502.02638](#).
- [166] LHCb collaboration, R. Aaij *et al.*, *Angular analysis of the  $B^0 \rightarrow K^{*0} e^+ e^-$  decay in the low- $q^2$  region*, JHEP **04** (2015) 064, [arXiv:1501.03038](#).
- [167] LHCb collaboration, R. Aaij *et al.*, *Observation of the  $B_s^0 \rightarrow \eta' \eta'$  decay*, Phys. Rev. Lett. **115** (2015) 051801, [arXiv:1503.07483](#).
- [168] LHCb collaboration, R. Aaij *et al.*, *Determination of the branching fractions of  $B_s^0 \rightarrow D_s^\mp K^\pm$  and  $B^0 \rightarrow D_s^- K^+$* , JHEP **02** (2015) 029, [arXiv:1412.7654](#).
- [169] LHCb collaboration, R. Aaij *et al.*, *Study of the rare  $B_s^0$  and  $B^0$  decays into the  $\pi^+ \pi^- \mu^+ \mu^-$  final state*, Phys. Lett. **B743** (2015) 46, [arXiv:1412.6433](#).
- [170] LHCb collaboration, R. Aaij *et al.*, *Search for long-lived particles decaying to jet pairs*, Eur. Phys. J. **C75** (2015) 152, [arXiv:1412.3021](#).
- [171] LHCb collaboration, R. Aaij *et al.*, *Observation of two new  $\Xi_b^-$  baryon resonances*, Phys. Rev. Lett. **114** (2015) 062004, [arXiv:1411.4849](#).
- [172] LHCb collaboration, R. Aaij *et al.*, *Measurement of the lifetime of the  $B_c^+$  meson using the  $B_c^+ \rightarrow J/\psi \pi^+$  decay mode*, Phys. Lett. **B742** (2015) 29, [arXiv:1411.6899](#).
- [173] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of CP violation in  $B_s^0 \rightarrow J/\psi K^+ K^-$  decays*, Phys. Rev. Lett. **114** (2015) 041801, [arXiv:1411.3104](#).



- [174] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP-violating phase  $\beta$  in  $\bar{B}^0 \rightarrow J/\psi \pi^+ \pi^-$  decays and limits on penguin effects*, Phys. Lett. **B742** (2015) 38, arXiv:1411.1634.
- [175] LHCb collaboration, R. Aaij *et al.*, *Measurement of the inelastic pp cross-section at a centre-of-mass energy of  $\sqrt{s} = 7$  TeV*, JHEP **02** (2015) 029, arXiv:1412.2500.
- [176] LHCb collaboration, R. Aaij *et al.*, *Study of  $\eta$ - $\eta'$  mixing from measurement of  $B_{(s)}^0 \rightarrow J/\psi \eta^{(\prime)}$  decay rates*, JHEP **01** (2015) 024, arXiv:1411.0943.
- [177] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $Z$ +b-jet cross-section in pp collisions at  $\sqrt{s} = 7$  TeV in the forward region*, JHEP **01** (2015) 064, arXiv:1411.1264.
- [178] LHCb collaboration, R. Aaij *et al.*, *Search for CP violation in  $D^0 \rightarrow \pi^- \pi^+ \pi^0$  decays with the energy test*, Phys. Lett. **B740** (2015) 158, arXiv:1410.4170.
- [179] LHCb collaboration, R. Aaij *et al.*, *Measurement of the semileptonic CP asymmetry in  $B^0$ - $\bar{B}^0$  mixing*, Phys. Rev. Lett. **114** (2015) 041601, arXiv:1409.8586.
- [180] LHCb collaboration, R. Aaij *et al.*, *Search for the lepton flavour violating decay  $\tau^- \rightarrow \mu^- \mu^+ \mu^-$* , JHEP **02** (2015) 121, arXiv:1409.8548.
- [181] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP-violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow D_s^+ D_s^-$  decays*, Phys. Rev. Lett. **113** (2014) 211801, arXiv:1409.4619.
- [182] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $B_c^+$  production at  $\sqrt{s} = 8$  TeV*, Phys. Rev. Lett. **114** (2015) 132001, arXiv:1411.2943.
- [183] CMS and LHCb collaborations, V. Khachatryan *et al.*, *Observation of the rare  $B_s^0 \rightarrow \mu^+ \mu^-$  decay from the combined analysis of CMS and LHCb data*, Nature **522** (2015) 68, arXiv:1411.4413.
- [184] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of the mass and lifetime of the  $\Xi_b^-$  baryon*, Phys. Rev. Lett. **113** (2014) 242002, arXiv:1409.8568.
- [185] LHCb collaboration, R. Aaij *et al.*, *Precision luminosity measurements at LHCb*, JINST **9** (2014) P12005, arXiv:1410.0149.
- [186] LHCb collaboration, R. Aaij *et al.*, *Search for CP violation using T-odd correlations in  $D^0 \rightarrow K^+ K^- \pi^+ \pi^-$  decays*, JHEP **10** (2014) 005, arXiv:1408.1299.
- [187] LHCb collaboration, R. Aaij *et al.*, *Determination of  $\gamma$  and  $-2\beta_s$  from charmless two-body decays of beauty mesons*, Phys. Lett. **B739** (2015) 1, arXiv:1408.4368.
- [188] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation in the three-body phase space of charmless  $B^\pm$  decays*, Phys. Rev. **D90** (2014) 112004, arXiv:1408.5373.
- [189] LHCb collaboration, R. Aaij *et al.*, *Observation of  $B_s^0 \rightarrow K^{*\pm} K^\mp$  and evidence of  $B_s^0 \rightarrow K^{*-} \pi^+$  decays*, New J. Phys. **16** (2014) 123001, arXiv:1407.7704.

- [190] LHCb collaboration, R. Aaij *et al.*, *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. **B739** (2014) 218, [arXiv:1408.0275](#).
- [191] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CKM angle  $\gamma$  using  $B^\pm \rightarrow DK^\pm$  with  $D \rightarrow K_S^0 \pi^+ \pi^-$ ,  $K_S^0 K^+ K^-$  decays*, JHEP **10** (2014) 097, [arXiv:1408.2748](#).
- [192] LHCb collaboration, R. Aaij *et al.*, *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, [arXiv:1409.1408](#).
- [193] LHCb collaboration, R. Aaij *et al.*, *First observation of a baryonic  $B_c^+$  decay*, Phys. Rev. Lett. **113** (2014) 152003, [arXiv:1408.0971](#).
- [194] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP asymmetry in  $B_s^0 \rightarrow D_s^\mp K^\pm$  decays*, JHEP **11** (2014) 060, [arXiv:1407.6127](#).
- [195] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $\bar{B}_s^0$  meson lifetime in  $D_s^+ \pi^-$  decays*, Phys. Rev. Lett. **113** (2014) 172001, [arXiv:1407.5873](#).
- [196] LHCb collaboration, R. Aaij *et al.*, *Dalitz plot analysis of  $B_s^0 \rightarrow \bar{D}^0 K^- \pi^+$  decays*, Phys. Rev. **D90** (2014) 072003, [arXiv:1407.7712](#).
- [197] LHCb collaboration, R. Aaij *et al.*, *Observation of overlapping spin-1 and spin-3  $\bar{D}^0 K^-$  resonances at mass 2.86 GeV/c<sup>2</sup>*, Phys. Rev. Lett. **113** (2014) 162001, [arXiv:1407.7574](#).
- [198] LHCb collaboration, R. Aaij *et al.*, *Evidence for CP violation in  $B^+ \rightarrow p \bar{p} K^+$  decays*, Phys. Rev. Lett. **113** (2014) 141801, [arXiv:1407.5907](#).
- [199] LHCb collaboration, R. Aaij *et al.*, *Measurement of the forward  $W$  boson production cross-section in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, JHEP **12** (2014) 079, [arXiv:1408.4354](#).
- [200] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP asymmetries in the decays  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  and  $B^+ \rightarrow K^+ \mu^+ \mu^-$* , JHEP **09** (2014) 177, [arXiv:1408.0978](#).
- [201] LHCb collaboration, R. Aaij *et al.*, *Study of  $\chi_b$  meson production in  $pp$  collisions at  $\sqrt{s}=7$  and 8 TeV and observation of the decay  $\chi_b \rightarrow \Upsilon(3S)\gamma$* , Eur. Phys. J. **C74** (2014) 3092, [arXiv:1407.7734](#).
- [202] LHCb collaboration, R. Aaij *et al.*, *First observations of the rare decays  $B^+ \rightarrow K^+ \pi^+ \pi^- \mu^+ \mu^-$  and  $B^+ \rightarrow \phi K^+ \mu^+ \mu^-$* , JHEP **10** (2014) 064, [arXiv:1408.1137](#).
- [203] LHCb collaboration, R. Aaij *et al.*, *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. **C75** (2015) 311, [arXiv:1409.3612](#).
- [204] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation parameters in  $B^0 \rightarrow DK^{*0}$  decays*, Phys. Rev. **D90** (2014) 112002, [arXiv:1407.8136](#).

- [205] LHCb collaboration, R. Aaij *et al.*, *Observation of charmonium pairs produced exclusively in  $pp$  collisions*, J. Phys. **G41** (2014) 115002, [arXiv:1407.5973](#).
- [206] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  violation in  $B_s^0 \rightarrow \phi\phi$  decays*, Phys. Rev. **D90** (2014) 052011, [arXiv:1407.2222](#).
- [207] LHCb collaboration, R. Aaij *et al.*, *Measurement of the ratio of  $B_c^+$  branching fractions to  $J/\psi\pi^+$  and  $J/\psi\mu^+\nu_\mu$* , Phys. Rev. **D90** (2014) 032009, [arXiv:1407.2126](#).
- [208] LHCb collaboration, R. Aaij *et al.*, *Test of lepton universality using  $B^+ \rightarrow K^+\ell^+\ell^-$  decays*, Phys. Rev. Lett. **113** (2014) 151601, [arXiv:1406.6482](#).
- [209] LHCb collaboration, R. Aaij *et al.*, *First measurement of the charge asymmetry in beauty-quark pair production*, Phys. Rev. Lett. **113** (2014) 082003, [arXiv:1406.4789](#).
- [210] LHCb collaboration, R. Aaij *et al.*, *Observation of  $Z$  production in proton-lead collisions at LHCb*, JHEP **09** (2014) 030, [arXiv:1406.2885](#).
- [211] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of the mass and lifetime of the  $\Xi_b^0$  baryon*, Phys. Rev. Lett. **113** (2014) 032001, [arXiv:1405.7223](#).
- [212] LHCb collaboration, R. Aaij *et al.*, *Observation of the  $\Lambda_b^0 \rightarrow J/\psi p \pi^-$  decay*, JHEP **07** (2014) 103, [arXiv:1406.0755](#).
- [213] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $CP$ -violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$  decays*, Phys. Lett. **B736** (2014) 186, [arXiv:1405.4140](#).
- [214] LHCb collaboration, R. Aaij *et al.*, *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, [arXiv:1406.2624](#).
- [215] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  violation and constraints on the CKM angle  $\gamma$  in  $B^\pm \rightarrow DK^\pm$  with  $D \rightarrow K_S^0 \pi^+ \pi^-$  decays*, Nucl. Phys. **B888** (2014) 169, [arXiv:1407.6211](#).
- [216] LHCb collaboration, R. Aaij *et al.*, *Observation of the  $B_s^0 \rightarrow J/\psi K_S^0 K^\pm \pi^\mp$  decay*, JHEP **07** (2014) 140, [arXiv:1405.3219](#).
- [217] LHCb collaboration, R. Aaij *et al.*, *Study of  $\Upsilon$  production and cold nuclear effects in  $pPb$  collisions at  $\sqrt{s_{NN}} = 5$  TeV*, JHEP **07** (2014) 094, [arXiv:1405.5152](#).
- [218] LHCb collaboration, R. Aaij *et al.*, *Observation of the resonant character of the  $Z(4430)^-$  state*, Phys. Rev. Lett. **112** (2014) 222002, [arXiv:1404.1903](#).
- [219] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  asymmetry in  $D^0 \rightarrow K^- K^+$  and  $D^0 \rightarrow \pi^- \pi^+$  decays*, JHEP **07** (2014) 041, [arXiv:1405.2797](#).
- [220] LHCb collaboration, R. Aaij *et al.*, *Measurement of the resonant and  $CP$  components in  $\bar{B}^0 \rightarrow J/\psi \pi^+ \pi^-$  decays*, Phys. Rev. **D90** (2014) 012003, [arXiv:1404.5673](#).
- [221] LHCb collaboration, R. Aaij *et al.*, *Effective lifetime measurements in the  $B_s^0 \rightarrow K^+ K^-$ ,  $B^0 \rightarrow K^+ \pi^-$  and  $B_s^0 \rightarrow \pi^+ K^-$  decays*, Phys. Lett. **B736** (2014) 446, [arXiv:1406.7204](#).

- [222] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $\Xi_b^-$  and  $\Omega_b^-$  baryon lifetimes*, Phys. Lett. **B736** (2014) 154, [arXiv:1405.1543](#).
- [223] LHCb collaboration, R. Aaij *et al.*, *Evidence for the decay  $B_c^+ \rightarrow J/\psi 3\pi^+ 2\pi^-$* , JHEP **05** (2014) 148, [arXiv:1404.0287](#).
- [224] LHCb collaboration, R. Aaij *et al.*, *Evidence for the decay  $X(3872) \rightarrow \psi(2S)\gamma$* , Nucl. Phys. **B886** (2014) 665, [arXiv:1404.0275](#).
- [225] LHCb collaboration, R. Aaij *et al.*, *Angular analysis of charged and neutral  $B \rightarrow K\mu^+\mu^-$  decays*, JHEP **05** (2014) 082, [arXiv:1403.8045](#).
- [226] LHCb collaboration, R. Aaij *et al.*, *Measurement of polarization amplitudes and CP asymmetries in  $B^0 \rightarrow \phi K^*(892)^0$* , JHEP **05** (2014) 069, [arXiv:1403.2888](#).
- [227] LHCb collaboration, R. Aaij *et al.*, *Study of the kinematic dependences of  $\Lambda_b^0$  production in  $pp$  collisions and a measurement of the  $\Lambda_b^0 \rightarrow \Lambda_c^+ \pi^-$  branching fraction*, JHEP **08** (2014) 143, [arXiv:1405.6842](#).
- [228] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of the ratio of the  $\Lambda_b^0$  to  $\bar{B}^0$  lifetimes*, Phys. Lett. **B734** (2014) 122, [arXiv:1402.6242](#).
- [229] LHCb collaboration, R. Aaij *et al.*, *Study of beauty hadron decays into pairs of charm hadrons*, Phys. Rev. Lett. **112** (2014) 202001, [arXiv:1403.3606](#).
- [230] LHCb collaboration, R. Aaij *et al.*, *Observation of photon polarization in the  $b \rightarrow s\gamma$  transition*, Phys. Rev. Lett. **112** (2014) 161801, [arXiv:1402.6852](#).
- [231] LHCb collaboration, R. Aaij *et al.*, *Measurement of resonant and CP components in  $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$  decays*, Phys. Rev. **D89** (2014) 092006, [arXiv:1402.6248](#).
- [232] LHCb collaboration, R. Aaij *et al.*, *A study of CP violation in  $B^\pm \rightarrow DK^\pm$  and  $B^\pm \rightarrow D\pi^\pm$  decays with  $D \rightarrow K_S^0 K^\pm \pi^\mp$  final states*, Phys. Lett. **B733** (2014) 36, [arXiv:1402.2982](#).
- [233] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $\psi(2S)$  polarisation in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C74** (2014) 2872, [arXiv:1403.1339](#).
- [234] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $\Upsilon$  production in  $pp$  collisions at  $\sqrt{s} = 2.76$  TeV*, Eur. Phys. J. **C74** (2014) 2835, [arXiv:1402.2539](#).
- [235] LHCb collaboration, R. Aaij *et al.*, *Measurements of the  $B^+$ ,  $B^0$ ,  $B_s^0$  meson and  $\Lambda_b^0$  baryon lifetimes*, JHEP **04** (2014) 114, [arXiv:1402.2554](#).
- [236] LHCb collaboration, R. Aaij *et al.*, *Search for Majorana neutrinos in  $B^- \rightarrow \pi^+ \mu^- \mu^-$  decays*, Phys. Rev. Lett. **112** (2014) 131802, [arXiv:1401.5361](#).
- [237] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_c^+$  meson lifetime using  $B_c^+ \rightarrow J/\psi \mu^+ \nu_\mu X$  decays*, Eur. Phys. J. **C74** (2014) 2839, [arXiv:1401.6932](#).
- [238] LHCb collaboration, R. Aaij *et al.*, *Observation of associated production of a  $Z$  boson with a  $D$  meson in the forward region*, JHEP **04** (2014) 091, [arXiv:1401.3245](#).

- [239] LHCb collaboration, R. Aaij *et al.*, *Searches for  $\Lambda_b^0$  and  $\Xi_b^0$  decays to  $K_S^0 p \pi^-$  and  $K_S^0 p K^-$  final states with first observation of the  $\Lambda_b^0 \rightarrow K_S^0 p \pi^-$  decay*, JHEP **04** (2014) 087, [arXiv:1402.0770](#).
- [240] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $\overline{B}_s^0 \rightarrow D_s^- D_s^+$  and  $\overline{B}_s^0 \rightarrow D^- D_s^+$  effective lifetimes*, Phys. Rev. Lett. **112** (2014) 111802, [arXiv:1312.1217](#).
- [241] LHCb collaboration, R. Aaij *et al.*, *Updated measurements of exclusive  $J/\psi$  and  $\psi(2S)$  production cross-sections in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, J. Phys. **G41** (2014) 055002, [arXiv:1401.3288](#).
- [242] LHCb collaboration, R. Aaij *et al.*, *Study of forward  $Z$ +jet production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, JHEP **01** (2014) 033, [arXiv:1310.8197](#).
- [243] LHCb collaboration, R. Aaij *et al.*, *Search for  $CP$  violation in the decay  $D^+ \rightarrow \pi^- \pi^+ \pi^+$* , Phys. Lett. **B728** (2014) 585, [arXiv:1310.7953](#).
- [244] LHCb collaboration, R. Aaij *et al.*, *Study of beauty baryon decays to  $D^0 p h^-$  and  $\Lambda_c^+ h^-$  final states*, Phys. Rev. **D89** (2014) 032001, [arXiv:1311.4823](#).
- [245] LHCb collaboration, R. Aaij *et al.*, *Observation of  $\overline{B}_{(s)}^0 \rightarrow J/\psi f_1(1285)$  decays and measurement of the  $f_1(1285)$  mixing angle*, Phys. Rev. Lett. **112** (2014) 091802, [arXiv:1310.2145](#).
- [246] LHCb collaboration, R. Aaij *et al.*, *Measurements of indirect  $CP$  asymmetries in  $D^0 \rightarrow K^- K^+$  and  $D^0 \rightarrow \pi^- \pi^+$  decays*, Phys. Rev. Lett. **112** (2014) 041801, [arXiv:1310.7201](#).
- [247] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $D^0 - \overline{D}^0$  mixing parameters and search for  $CP$  violation using  $D^0 \rightarrow K^+ \pi^-$  decays*, Phys. Rev. Lett. **111** (2013) 251801, [arXiv:1309.6534](#).
- [248] LHCb collaboration, R. Aaij *et al.*, *Study of  $J/\psi$  production and cold nuclear matter effects in  $pPb$  collisions at  $\sqrt{s_{NN}} = 5$  TeV*, JHEP **02** (2014) 072, [arXiv:1308.6729](#).
- [249] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  violation in the phase space of  $B^\pm \rightarrow K^+ K^- \pi^\pm$  and  $B^\pm \rightarrow \pi^+ \pi^- \pi^\pm$  decays*, Phys. Rev. Lett. **112** (2014) 011801, [arXiv:1310.4740](#).
- [250] LHCb collaboration, R. Aaij *et al.*, *Search for the decay  $D^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-$* , Phys. Lett. **B728** (2014) 234, [arXiv:1310.2535](#).
- [251] LHCb collaboration, R. Aaij *et al.*, *Search for the doubly charmed baryon  $\Xi_{cc}^+$* , JHEP **12** (2013) 090, [arXiv:1310.2538](#).
- [252] LHCb collaboration, R. Aaij *et al.*, *Measurement of the charge asymmetry in  $B^\pm \rightarrow \phi K^\pm$  and search for  $B^\pm \rightarrow \phi \pi^\pm$  decays*, Phys. Lett. **B728** (2014) 85, [arXiv:1309.3742](#).
- [253] LHCb collaboration, R. Aaij *et al.*, *Observation of the decay  $B_c^+ \rightarrow J/\psi K^+ K^- \pi^+$* , JHEP **11** (2013) 094, [arXiv:1309.0587](#).

- [254] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_s^0 \rightarrow \mu^+\mu^-$  branching fraction and search for  $B^0 \rightarrow \mu^+\mu^-$  decays at the LHCb experiment*, Phys. Rev. Lett. **111** (2013) 101805, [arXiv:1307.5024](#).
- [255] LHCb collaboration, R. Aaij *et al.*, *First observation of  $\bar{B}^0 \rightarrow J/\psi K^+K^-$  and search for  $\bar{B}^0 \rightarrow J/\psi \phi$  decays*, Phys. Rev. **D88** (2013) 072005, [arXiv:1308.5916](#).
- [256] LHCb collaboration, R. Aaij *et al.*, *Observation of the decay  $B_c^+ \rightarrow B_s^0 \pi^+$* , Phys. Rev. Lett. **111** (2013) 181801, [arXiv:1308.4544](#).
- [257] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP asymmetry in  $B^+ \rightarrow K^+ \mu^+ \mu^-$  decays*, Phys. Rev. Lett. **111** (2013) 151801, [arXiv:1308.1340](#).
- [258] LHCb collaboration, R. Aaij *et al.*, *Study of  $B_{(s)}^0 \rightarrow K_S^0 h^+ h^-$  decays with first observation of  $B_s^0 \rightarrow K_S^0 K^\pm \pi^\mp$  and  $B_s^0 \rightarrow K_S^0 \pi^+ \pi^-$* , JHEP **10** (2013) 143, [arXiv:1307.7648](#).
- [259] LHCb collaboration, R. Aaij *et al.*, *Model-independent search for CP violation in  $D^0 \rightarrow K^- K^+ \pi^+ \pi^-$  and  $D^0 \rightarrow \pi^- \pi^+ \pi^- \pi^+$  decays*, Phys. Lett. **B726** (2013) 623, [arXiv:1308.3189](#).
- [260] LHCb collaboration, R. Aaij *et al.*, *First measurement of time-dependent CP violation in  $B_s^0 \rightarrow K^+ K^-$  decays*, JHEP **10** (2013) 183, [arXiv:1308.1428](#).
- [261] LHCb collaboration, R. Aaij *et al.*, *Observation of a resonance in  $B^+ \rightarrow K^+ \mu^+ \mu^-$  decays at low recoil*, Phys. Rev. Lett. **111** (2013) 112003, [arXiv:1307.7595](#).
- [262] LHCb collaboration, R. Aaij *et al.*, *First evidence for the two-body charmless baryonic decay  $B^0 \rightarrow p \bar{p}$* , JHEP **10** (2013) 005, [arXiv:1308.0961](#).
- [263] LHCb collaboration, R. Aaij *et al.*, *Measurement of form-factor-independent observables in the decay  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$* , Phys. Rev. Lett. **111** (2013) 191801, [arXiv:1308.1707](#).
- [264] LHCb collaboration, R. Aaij *et al.*, *Observation of  $B_s^0 - \bar{B}_s^0$  mixing and measurement of mixing frequencies using semileptonic B decays*, Eur. Phys. J. **C73** (2013) 2655, [arXiv:1308.1302](#).
- [265] LHCb collaboration, R. Aaij *et al.*, *Branching fraction and CP asymmetry of the decays  $B^+ \rightarrow K_S^0 \pi^+$  and  $B^+ \rightarrow K_S^0 K^+$* , Phys. Lett. **B726** (2013) 646, [arXiv:1308.1277](#).
- [266] LHCb collaboration, R. Aaij *et al.*, *Measurement of the flavour-specific CP-violating asymmetry  $a_{\text{sl}}^s$  in  $B_s^0$  decays*, Phys. Lett. **B728** (2014) 607, [arXiv:1308.1048](#).
- [267] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of the  $\Lambda_b^0$  baryon lifetime*, Phys. Rev. Lett. **111** (2013) 102003, [arXiv:1307.2476](#).
- [268] LHCb collaboration, R. Aaij *et al.*, *Studies of the decays  $B^+ \rightarrow p \bar{p} h^+$  and observation of  $B^+ \rightarrow \bar{\Lambda}(1520) p$* , Phys. Rev. **D88** (2013) 052015, [arXiv:1307.6165](#).

- [269] LHCb collaboration, R. Aaij *et al.*, *Search for the lepton-flavour-violating decays  $B_s^0 \rightarrow e^\pm \mu^\mp$  and  $B^0 \rightarrow e^\pm \mu^\mp$* , Phys. Rev. Lett. **111** (2013) 141801, [arXiv:1307.4889](#).
- [270] LHCb collaboration, R. Aaij *et al.*, *Searches for  $B_{(s)}^0 \rightarrow J/\psi p \bar{p}$  and  $B^+ \rightarrow J/\psi p \bar{p} \pi^+$  decays*, JHEP **09** (2013) 006, [arXiv:1306.4489](#).
- [271] LHCb collaboration, R. Aaij *et al.*, *Measurement of the relative rate of prompt  $\chi_{c0}$ ,  $\chi_{c1}$  and  $\chi_{c2}$  production at  $\sqrt{s} = 7$  TeV*, JHEP **10** (2013) 115, [arXiv:1307.4285](#).
- [272] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP violation in the phase space of  $B^\pm \rightarrow K^\pm \pi^+ \pi^-$  and  $B^\pm \rightarrow K^\pm K^+ K^-$  decays*, Phys. Rev. Lett. **111** (2013) 101801, [arXiv:1306.1246](#).
- [273] LHCb collaboration, R. Aaij *et al.*, *Study of  $D_J$  meson decays to  $D^+ \pi^-$ ,  $D^0 \pi^+$  and  $D^{*+} \pi^-$  final states in pp collisions*, JHEP **09** (2013) 145, [arXiv:1307.4556](#).
- [274] LHCb collaboration, R. Aaij *et al.*, *Measurement of the differential branching fraction of the decay  $\Lambda_b^0 \rightarrow \Lambda \mu^+ \mu^-$* , Phys. Lett. **B725** (2013) 25, [arXiv:1306.2577](#).
- [275] LHCb collaboration, R. Aaij *et al.*, *Observation of  $B_s^0 \rightarrow \chi_{c1} \phi$  decay and study of  $B^0 \rightarrow \chi_{c1,2} K^{*0}$  decays*, Nucl. Phys. **B874** (2013) 663, [arXiv:1305.6511](#).
- [276] LHCb collaboration, R. Aaij *et al.*, *Measurement of the polarization amplitudes in  $B^0 \rightarrow J/\psi K^*(892)^0$  decays*, Phys. Rev. **D88** (2013) 052002, [arXiv:1307.2782](#).
- [277] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions of the decays  $B_s^0 \rightarrow \bar{D}^0 K^- \pi^+$  and  $B^0 \rightarrow \bar{D}^0 K^+ \pi^-$* , Phys. Rev. **D87** (2013) 112009, [arXiv:1304.6317](#).
- [278] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_c^+ \rightarrow J/\psi K^+$* , JHEP **09** (2013) 075, [arXiv:1306.6723](#).
- [279] LHCb collaboration, R. Aaij *et al.*, *A measurement of the CKM angle  $\gamma$  from a combination of  $B^\pm \rightarrow Dh^\pm$  analyses*, Phys. Lett. **B726** (2013) 151, [arXiv:1305.2050](#).
- [280] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$* , JHEP **08** (2013) 131, [arXiv:1304.6325](#).
- [281] LHCb collaboration, R. Aaij *et al.*, *First observation of CP violation in the decays of  $B_s^0$  mesons*, Phys. Rev. Lett. **110** (2013) 221601, [arXiv:1304.6173](#).
- [282] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay  $B_s^0 \rightarrow \phi \mu^+ \mu^-$* , JHEP **07** (2013) 084, [arXiv:1305.2168](#).
- [283] LHCb collaboration, R. Aaij *et al.*, *Production of  $J/\psi$  and  $\Upsilon$  mesons in pp collisions at  $\sqrt{s} = 8$  TeV*, JHEP **06** (2013) 064, [arXiv:1304.6977](#).
- [284] LHCb collaboration, R. Aaij *et al.*, *Measurement of the effective  $B_s^0 \rightarrow J/\psi K_S^0$  lifetime*, Nucl. Phys. **B873** (2013) 275, [arXiv:1304.4500](#).

- [285] LHCb collaboration, R. Aaij *et al.*, *Searches for violation of lepton flavour and baryon number in tau lepton decays at LHCb*, Phys. Lett. **B724** (2013) 36, [arXiv:1304.4518](#).
- [286] LHCb collaboration, R. Aaij *et al.*, *Search for the rare decay  $D^0 \rightarrow \mu^+\mu^-$* , Phys. Lett. **B725** (2013) 15, [arXiv:1305.5059](#).
- [287] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_s^0 \rightarrow \phi \bar{K}^{*0}$* , JHEP **11** (2013) 092, [arXiv:1306.2239](#).
- [288] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of  $D$  meson mass differences*, JHEP **06** (2013) 065, [arXiv:1304.6865](#).
- [289] LHCb collaboration, R. Aaij *et al.*, *Observation of  $B_c^+ \rightarrow J/\psi D_s^+$  and  $B_c^+ \rightarrow J/\psi D_s^{*+}$  decays*, Phys. Rev. **D87** (2013) 112012, [arXiv:1304.4530](#).
- [290] LHCb collaboration, R. Aaij *et al.*, *Limits on neutral Higgs boson production in the forward region in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, JHEP **05** (2013) 132, [arXiv:1304.2591](#).
- [291] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $J/\psi$  polarization in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C73** (2013) 2631, [arXiv:1307.6379](#).
- [292] LHCb collaboration, R. Aaij *et al.*, *First measurement of the  $CP$ -violating phase in  $B_s^0 \rightarrow \phi\phi$  decays*, Phys. Rev. Lett. **110** (2013) 241802, [arXiv:1303.7125](#).
- [293] LHCb collaboration, R. Aaij *et al.*, *Precision measurement of the  $B_s^0\text{--}\bar{B}_s^0$  oscillation frequency in the decay  $B_s^0 \rightarrow D_s^-\pi^+$* , New J. Phys. **15** (2013) 053021, [arXiv:1304.4741](#).
- [294] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B^0 \rightarrow K^{*0}e^+e^-$  branching fraction at low dilepton mass*, JHEP **05** (2013) 159, [arXiv:1304.3035](#).
- [295] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $B$  meson production cross-sections in proton-proton collisions at  $\sqrt{s} = 7$  TeV*, JHEP **08** (2013) 117, [arXiv:1306.3663](#).
- [296] LHCb collaboration, R. Aaij *et al.*, *Search for direct  $CP$  violation in  $D^0 \rightarrow h^-h^+$  modes using semileptonic  $B$  decays*, Phys. Lett. **B723** (2013) 33, [arXiv:1303.2614](#).
- [297] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $CP$  violation and the  $B_s^0$  meson decay width difference with  $B_s^0 \rightarrow J/\psi K^+K^-$  and  $B_s^0 \rightarrow J/\psi \pi^+\pi^-$  decays*, Phys. Rev. **D87** (2013) 112010, [arXiv:1304.2600](#).
- [298] LHCb collaboration, R. Aaij *et al.*, *Determination of the  $X(3872)$  meson quantum numbers*, Phys. Rev. Lett. **110** (2013) 222001, [arXiv:1302.6269](#).
- [299] LHCb collaboration, R. Aaij *et al.*, *Measurements of the  $\Lambda_b^0 \rightarrow J/\psi \Lambda$  decay amplitudes and the  $\Lambda_b^0$  polarisation in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Phys. Lett. **B724** (2013) 27, [arXiv:1302.5578](#).



- [300] LHCb collaboration, R. Aaij *et al.*, *Search for the decay  $B_s^0 \rightarrow D^{*\mp}\pi^\pm$* , Phys. Rev. **D87** (2013) 071101(R), [arXiv:1302.6446](#).
- [301] LHCb collaboration, R. Aaij *et al.*, *Observation of the suppressed ADS modes  $B^\pm \rightarrow [\pi^\pm K^\mp \pi^+ \pi^-]_D K^\pm$  and  $B^\pm \rightarrow [\pi^\pm K^\mp \pi^+ \pi^-]_D \pi^\pm$* , Phys. Lett. **B723** (2013) 44, [arXiv:1303.4646](#).
- [302] LHCb collaboration, R. Aaij *et al.*, *Observation of the decay  $B_c^+ \rightarrow \psi(2S)\pi^+$* , Phys. Rev. **D87** (2013) 071103(R), [arXiv:1303.1737](#).
- [303] LHCb collaboration, R. Aaij *et al.*, *Observations of  $B_s^0 \rightarrow \psi(2S)\eta$  and  $B_{(s)}^0 \rightarrow \psi(2S)\pi^+\pi^-$  decays*, Nucl. Phys. **B871** (2013) 403, [arXiv:1302.6354](#).
- [304] LHCb collaboration, R. Aaij *et al.*, *Search for CP violation in  $D^+ \rightarrow \phi\pi^+$  and  $D_s^+ \rightarrow K_S^0\pi^+$  decays*, JHEP **06** (2013) 112, [arXiv:1303.4906](#).
- [305] LHCb collaboration, R. Aaij *et al.*, *Search for  $D_{(s)}^+ \rightarrow \pi^+\mu^+\mu^-$  and  $D_{(s)}^+ \rightarrow \pi^-\mu^+\mu^+$  decays*, Phys. Lett. **B724** (2013) 203, [arXiv:1304.6365](#).
- [306] LHCb collaboration, R. Aaij *et al.*, *First observations of  $\bar{B}_s^0 \rightarrow D^+D^-$ ,  $D_s^+D^-$  and  $D^0\bar{D}^0$  decays*, Phys. Rev. **D87** (2013) 092007, [arXiv:1302.5854](#).
- [307] LHCb collaboration, R. Aaij *et al.*, *Search for rare  $B_{(s)}^0 \rightarrow \mu^+\mu^-\mu^+\mu^-$  decays*, Phys. Rev. Lett. **110** (2013) 211801, [arXiv:1303.1092](#).
- [308] LHCb collaboration, R. Aaij *et al.*, *Measurements of the  $\Lambda_b^0$ ,  $\Xi_b^-$ , and  $\Omega_b^-$  baryon masses*, Phys. Rev. Lett. **110** (2013) 182001, [arXiv:1302.1072](#).
- [309] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions of  $B^+ \rightarrow p\bar{p}K^+$  decays*, Eur. Phys. J. **C73** (2013) 2462, [arXiv:1303.7133](#).
- [310] LHCb collaboration, R. Aaij *et al.*, *Study of  $B^0 \rightarrow D^{*-}\pi^+\pi^-\pi^+$  and  $B^0 \rightarrow D^{*-}K^+\pi^-\pi^+$  decays*, Phys. Rev. **D87** (2013) 092001, [arXiv:1303.6861](#).
- [311] LHCb collaboration, R. Aaij *et al.*, *Analysis of the resonant components in  $\bar{B}^0 \rightarrow J/\psi\pi^+\pi^-$* , Phys. Rev. **D87** (2013) 052001, [arXiv:1301.5347](#).
- [312] LHCb collaboration, R. Aaij *et al.*, *Exclusive  $J/\psi$  and  $\psi(2S)$  production in pp collisions at  $\sqrt{s} = 7$  TeV*, J. Phys. **G40** (2013) 045001, [arXiv:1301.7084](#).
- [313] LHCb collaboration, R. Aaij *et al.*, *First evidence for the decay  $B_s^0 \rightarrow \mu^+\mu^-$* , Phys. Rev. Lett. **110** (2013) 021801, [arXiv:1211.2674](#).
- [314] LHCb collaboration, R. Aaij *et al.*, *Measurement of CP observables in  $B^0 \rightarrow DK^{*0}$  with  $D \rightarrow K^+K^-$* , JHEP **03** (2013) 067, [arXiv:1212.5205](#).
- [315] LHCb collaboration, R. Aaij *et al.*, *Prompt charm production in pp collisions at  $\sqrt{s} = 7$  TeV*, Nucl. Phys. **B871** (2013) 1, [arXiv:1302.2864](#).
- [316] LHCb collaboration, R. Aaij *et al.*, *Amplitude analysis and branching fraction measurement of  $\bar{B}_s^0 \rightarrow J/\psi K^+K^-$* , Phys. Rev. **D87** (2013) 072004, [arXiv:1302.1213](#).

- [317] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $J/\psi$  production in  $pp$  collisions at  $\sqrt{s} = 2.76$  TeV*, JHEP **02** (2013) 041, [arXiv:1212.1045](#).
- [318] LHCb collaboration, R. Aaij *et al.*, *Observation of  $D^0$ - $\bar{D}^0$  oscillations*, Phys. Rev. Lett. **110** (2013) 101802, [arXiv:1211.1230](#).
- [319] LHCb collaboration, R. Aaij *et al.*, *Measurement of the fragmentation fraction ratio  $f_s/f_d$  and its dependence on  $B$  meson kinematics*, JHEP **04** (2013) 001, [arXiv:1301.5286](#).
- [320] LHCb collaboration, R. Aaij *et al.*, *Measurement of the cross-section for  $Z \rightarrow e^+e^-$  production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, JHEP **02** (2013) 106, [arXiv:1212.4620](#).
- [321] LHCb collaboration, R. Aaij *et al.*, *Measurement of the time-dependent  $CP$  asymmetry in  $B^0 \rightarrow J/\psi K_S^0$  decays*, Phys. Lett. **B721** (2013) 24, [arXiv:1211.6093](#).
- [322] LHCb collaboration, R. Aaij *et al.*, *Measurement of the forward energy flow in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C73** (2013) 2421, [arXiv:1212.4755](#).
- [323] LHCb collaboration, R. Aaij *et al.*, *First observation of the decays  $\bar{B}_{(s)}^0 \rightarrow D_s^+ K^- \pi^+ \pi^-$  and  $\bar{B}_s^0 \rightarrow D_{s1}(2536)^+ \pi^-$* , Phys. Rev. **D86** (2012) 112005, [arXiv:1211.1541](#).
- [324] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B^0$ - $\bar{B}^0$  oscillation frequency  $\Delta m_d$  with the decays  $B^0 \rightarrow D^- \pi^+$  and  $B^0 \rightarrow J/\psi K^{*0}$* , Phys. Lett. **B719** (2013) 318, [arXiv:1210.6750](#).
- [325] LHCb collaboration, R. Aaij *et al.*, and A. Bharucha *et al.*, *Implications of LHCb measurements and future prospects*, Eur. Phys. J. **C73** (2013) 2373, [arXiv:1208.3355](#).
- [326] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_{s2}^{*}(5840)^0 \rightarrow B^{*+} K^-$  and studies of excited  $B_s^0$  mesons*, Phys. Rev. Lett. **110** (2013) 151803, [arXiv:1211.5994](#).
- [327] LHCb collaboration, R. Aaij *et al.*, *A study of the  $Z$  production cross-section in  $pp$  collisions at  $\sqrt{s} = 7$  TeV using tau final states*, JHEP **01** (2013) 111, [arXiv:1210.6289](#).
- [328] LHCb collaboration, R. Aaij *et al.*, *Measurements of  $B_c^+$  production and mass with the  $B_c^+ \rightarrow J/\psi \pi^+$  decay*, Phys. Rev. Lett. **109** (2012) 232001, [arXiv:1209.5634](#).
- [329] LHCb collaboration, R. Aaij *et al.*, *A model-independent Dalitz plot analysis of  $B^\pm \rightarrow DK^\pm$  with  $D \rightarrow K_S^0 h^+ h^-$  ( $h = \pi, K$ ) decays and constraints on the  $CKM$  angle  $\gamma$* , Phys. Lett. **B718** (2012) 43, [arXiv:1209.5869](#).
- [330] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $D^\pm$  production asymmetry in 7 TeV  $pp$  collisions*, Phys. Lett. **B718** (2013) 902, [arXiv:1210.4112](#).
- [331] LHCb collaboration, R. Aaij *et al.*, *First evidence for the annihilation decay mode  $B^+ \rightarrow D_s^+ \phi$* , JHEP **02** (2013) 043, [arXiv:1210.1089](#).

- [332] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the  $B^+ \rightarrow K^+ \mu^+ \mu^-$  decay*, JHEP **02** (2013) 105, [arXiv:1209.4284](#).
- [333] LHCb collaboration, R. Aaij *et al.*, *Search for the rare decay  $K_S^0 \rightarrow \mu^+ \mu^-$* , JHEP **01** (2013) 090, [arXiv:1209.4029](#).
- [334] LHCb collaboration, R. Aaij *et al.*, *Evidence for the decay  $B^0 \rightarrow J/\psi \omega$  and measurement of the relative branching fractions of  $B_s^0$  meson decays to  $J/\psi \eta$  and  $J/\psi \eta'$* , Nucl. Phys. **B867** (2013) 547, [arXiv:1210.2631](#).
- [335] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP asymmetry in  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$  decays*, Phys. Rev. Lett. **110** (2013) 031801, [arXiv:1210.4492](#).
- [336] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B^+ \rightarrow \pi^+ \mu^+ \mu^-$* , JHEP **12** (2012) 125, [arXiv:1210.2645](#).
- [337] LHCb collaboration, R. Aaij *et al.*, *Measurement of the ratio of branching fractions  $\mathcal{B}(B^0 \rightarrow K^{*0} \gamma)/\mathcal{B}(B_s^0 \rightarrow \phi \gamma)$  and the direct CP asymmetry in  $B^0 \rightarrow K^{*0} \gamma$* , Nucl. Phys. **B867** (2013) 1, [arXiv:1209.0313](#).
- [338] LHCb collaboration, R. Aaij *et al.*, *Observation of  $B^0 \rightarrow \bar{D}^0 K^+ K^-$  and evidence for  $B_s^0 \rightarrow \bar{D}^0 K^+ K^-$* , Phys. Rev. Lett. **109** (2012) 131801, [arXiv:1207.5991](#).
- [339] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $\bar{B}_s^0$  effective lifetime in the  $J/\psi f_0(980)$  final state*, Phys. Rev. Lett. **109** (2012) 152002, [arXiv:1207.0878](#).
- [340] LHCb collaboration, R. Aaij *et al.*, *Study of  $D_{sJ}$  decays to  $D^+ K_S^0$  and  $D^0 K^+$  final states in  $pp$  collisions*, JHEP **10** (2012) 151, [arXiv:1207.6016](#).
- [341] LHCb collaboration, R. Aaij *et al.*, *Measurement of the fraction of  $\Upsilon(1S)$  originating from  $\chi_b(1P)$  decays in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, JHEP **11** (2012) 031, [arXiv:1209.0282](#).
- [342] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_s^0 \rightarrow J/\psi \bar{K}^{*0}$  branching fraction and angular amplitudes*, Phys. Rev. **D86** (2012) 071102(R), [arXiv:1208.0738](#).
- [343] LHCb collaboration, R. Aaij *et al.*, *Measurement of the effective  $B_s^0 \rightarrow K^+ K^-$  lifetime*, Phys. Lett. **B716** (2012) 393, [arXiv:1207.5993](#).
- [344] LHCb collaboration, R. Aaij *et al.*, *Observation of excited  $\Lambda_b^0$  baryons*, Phys. Rev. Lett. **109** (2012) 172003, [arXiv:1205.3452](#).
- [345] LHCb collaboration, R. Aaij *et al.*, *Measurement of the isospin asymmetry in  $B \rightarrow K^{(*)} \mu^+ \mu^-$  decays*, JHEP **07** (2012) 133, [arXiv:1205.3422](#).
- [346] LHCb collaboration, R. Aaij *et al.*, *Measurement of relative branching fractions of  $B$  decays to  $\psi(2S)$  and  $J/\psi$  mesons*, Eur. Phys. J. **C72** (2012) 2118, [arXiv:1205.0918](#).
- [347] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $D_s^+ - D_s^-$  production asymmetry in 7 TeV  $pp$  collisions*, Phys. Lett. **B713** (2012) 186, [arXiv:1205.0897](#).

- [348] LHCb collaboration, R. Aaij *et al.*, *Inclusive W and Z production in the forward region at  $\sqrt{s} = 7$  TeV*, JHEP **06** (2012) 058, [arXiv:1204.1620](#).
- [349] LHCb collaboration, R. Aaij *et al.*, *Strong constraints on the rare decays  $B_s^0 \rightarrow \mu^+ \mu^-$  and  $B^0 \rightarrow \mu^+ \mu^-$* , Phys. Rev. Lett. **108** (2012) 231801, [arXiv:1203.4493](#).
- [350] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP-violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$  decays*, Phys. Lett. **B713** (2012) 378, [arXiv:1204.5675](#).
- [351] LHCb collaboration, R. Aaij *et al.*, *Analysis of the resonant components in  $\bar{B}_s^0 \rightarrow J/\psi \pi^+ \pi^-$* , Phys. Rev. **D86** (2012) 052006, [arXiv:1204.5643](#).
- [352] LHCb collaboration, R. Aaij *et al.*, *Measurement of the polarization amplitudes and triple product asymmetries in the  $B_s^0 \rightarrow \phi \phi$  decay*, Phys. Lett. **B713** (2012) 369, [arXiv:1204.2813](#).
- [353] LHCb collaboration, R. Aaij *et al.*, *Observation of double charm production involving open charm in pp collisions at  $\sqrt{s} = 7$  TeV*, JHEP **06** (2012) 141, Addendum *ibid.* **03** (2014) 108, [arXiv:1205.0975](#).
- [354] LHCb collaboration, R. Aaij *et al.*, *Measurement of b-hadron branching fractions for two-body decays into charmless charged hadrons*, JHEP **10** (2012) 037, [arXiv:1206.2794](#).
- [355] LHCb collaboration, R. Aaij *et al.*, *Observation of CP violation in  $B^\pm \rightarrow DK^\pm$  decays*, Phys. Lett. **B712** (2012) 203, Erratum *ibid.* **B713** (2012) 351, [arXiv:1203.3662](#).
- [356] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $\psi(2S)$  meson production in pp collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C72** (2012) 2100, [arXiv:1204.1258](#).
- [357] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_c^+ \rightarrow J/\psi \pi^+ \pi^- \pi^+$* , Phys. Rev. Lett. **108** (2012) 251802, [arXiv:1204.0079](#).
- [358] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B^\pm$  production cross-section in pp collisions at  $\sqrt{s} = 7$  TeV*, JHEP **04** (2012) 093, [arXiv:1202.4812](#).
- [359] LHCb collaboration, R. Aaij *et al.*, *Measurement of the ratio of branching fractions  $\mathcal{B}(B^0 \rightarrow K^{*0} \gamma)/\mathcal{B}(B_s^0 \rightarrow \phi \gamma)$* , Phys. Rev. **D85** (2012) 112013, [arXiv:1202.6267](#).
- [360] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_s^0 \rightarrow J/\psi K_S^0$  branching fraction*, Phys. Lett. **B713** (2012) 172, [arXiv:1205.0934](#).
- [361] LHCb collaboration, R. Aaij *et al.*, *First observation of the decays  $\bar{B}^0 \rightarrow D^+ K^- \pi^+ \pi^-$  and  $B^- \rightarrow D^0 K^- \pi^+ \pi^-$* , Phys. Rev. Lett. **108** (2012) 161801, [arXiv:1201.4402](#).
- [362] LHCb collaboration, R. Aaij *et al.*, *Searches for Majorana neutrinos in  $B^-$  decays*, Phys. Rev. **D85** (2012) 112004, [arXiv:1201.5600](#).
- [363] LHCb collaboration, R. Aaij *et al.*, *Measurement of prompt hadron production ratios in pp collisions at  $\sqrt{s} = 0.9$  and 7 TeV*, Eur. Phys. J. **C72** (2012) 2168, [arXiv:1206.5160](#).

- [364] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $\Upsilon$  production in pp collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C72** (2012) 2025, [arXiv:1202.6579](#).
- [365] LHCb collaboration, R. Aaij *et al.*, *Measurement of b-hadron masses*, Phys. Lett. **B708** (2012) 241, [arXiv:1112.4896](#).
- [366] LHCb collaboration, R. Aaij *et al.*, *Observation of  $X(3872)$  production in pp collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C72** (2012) 1972, [arXiv:1112.5310](#).
- [367] LHCb collaboration, R. Aaij *et al.*, *Search for the  $X(4140)$  state in  $B^+ \rightarrow J/\psi \phi K^+$  decays*, Phys. Rev. **D85** (2012) 091103(R), [arXiv:1202.5087](#).
- [368] LHCb collaboration, R. Aaij *et al.*, *Measurement of mixing and CP violation parameters in two-body charm decays*, JHEP **04** (2012) 129, [arXiv:1112.4698](#).
- [369] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP violating phase  $\phi_s$  in  $\bar{B}_s^0 \rightarrow J/\psi f_0(980)$* , Phys. Lett. **B707** (2012) 497, [arXiv:1112.3056](#).
- [370] LHCb collaboration, R. Aaij *et al.*, *Measurement of the ratio of prompt  $\chi_c$  to  $J/\psi$  production in pp collisions at  $\sqrt{s} = 7$  TeV*, Phys. Lett. **B718** (2012) 431, [arXiv:1204.1462](#).
- [371] LHCb collaboration, R. Aaij *et al.*, *First evidence of direct CP violation in charmless two-body decays of  $B_s^0$  mesons*, Phys. Rev. Lett. **108** (2012) 201601, [arXiv:1202.6251](#).
- [372] LHCb collaboration, R. Aaij *et al.*, *Determination of the sign of the decay width difference in the  $B_s^0$  system*, Phys. Rev. Lett. **108** (2012) 241801, [arXiv:1202.4717](#).
- [373] LHCb collaboration, R. Aaij *et al.*, *Opposite-side flavour tagging of B mesons at the LHCb experiment*, Eur. Phys. J. **C72** (2012) 2022, [arXiv:1202.4979](#).
- [374] LHCb collaboration, R. Aaij *et al.*, *Observation of  $\bar{B}_s^0 \rightarrow J/\psi f_2'(1525)$  in  $J/\psi K^+ K^-$  final states*, Phys. Rev. Lett. **108** (2012) 151801, [arXiv:1112.4695](#).
- [375] LHCb collaboration, R. Aaij *et al.*, *Search for the rare decays  $B_s^0 \rightarrow \mu^+ \mu^-$  and  $B^0 \rightarrow \mu^+ \mu^-$* , Phys. Lett. **B708** (2012) 55, [arXiv:1112.1600](#).
- [376] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions and CP asymmetries of  $B^\pm \rightarrow J/\psi \pi^\pm$  and  $B^\pm \rightarrow \psi(2S) \pi^\pm$  decays*, Phys. Rev. **D85** (2012) 091105(R), [arXiv:1203.3592](#).
- [377] LHCb collaboration, R. Aaij *et al.*, *Evidence for CP violation in time-integrated  $D^0 \rightarrow h^- h^+$  decay rates*, Phys. Rev. Lett. **108** (2012) 111602, [arXiv:1112.0938](#).
- [378] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions of the decays  $B_s^0 \rightarrow D_s^\mp K^\pm$  and  $B_s^0 \rightarrow D_s^- \pi^+$* , JHEP **06** (2012) 115, [arXiv:1204.1237](#).
- [379] LHCb collaboration, R. Aaij *et al.*, *Measurement of the CP-violating phase  $\phi_s$  in the decay  $B_s^0 \rightarrow J/\psi \phi$* , Phys. Rev. Lett. **108** (2012) 101803, [arXiv:1112.3183](#).

- [380] LHCb collaboration, R. Aaij *et al.*, *Differential branching fraction and angular analysis of the decay  $B^0 \rightarrow K^{*0}\mu^+\mu^-$* , Phys. Rev. Lett. **108** (2012) 181806, [arXiv:1112.3515](#).
- [381] LHCb collaboration, R. Aaij *et al.*, *Measurement of the cross-section ratio  $\sigma(\chi_{c2})/\sigma(\chi_{c1})$  for prompt  $\chi_c$  production at  $\sqrt{s} = 7$  TeV*, Phys. Lett. **B714** (2012) 215, [arXiv:1202.1080](#).
- [382] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $b$  hadron production fractions in 7 TeV  $pp$  collisions*, Phys. Rev. **D85** (2012) 032008, [arXiv:1111.2357](#).
- [383] LHCb collaboration, R. Aaij *et al.*, *Search for CP violation in  $D^+ \rightarrow K^- K^+ \pi^+$  decays*, Phys. Rev. **D84** (2011) 112008, [arXiv:1110.3970](#).
- [384] LHCb collaboration, R. Aaij *et al.*, *Measurements of the branching fractions for  $B_{(s)} \rightarrow D_{(s)}\pi\pi\pi$  and  $\Lambda_b^0 \rightarrow \Lambda_c^+\pi\pi\pi$* , Phys. Rev. **D84** (2011) 092001, Erratum *ibid.* **D85** (2012) 039904, [arXiv:1109.6831](#).
- [385] LHCb collaboration, R. Aaij *et al.*, *Absolute luminosity measurements with the LHCb detector at the LHC*, JINST **7** (2012) P01010, [arXiv:1110.2866](#).
- [386] LHCb collaboration, R. Aaij *et al.*, *Measurement of the effective  $B_s^0 \rightarrow K^+ K^-$  lifetime*, Phys. Lett. **B707** (2012) 349, [arXiv:1111.0521](#).
- [387] LHCb collaboration, R. Aaij *et al.*, *Observation of  $J/\psi$ -pair production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Phys. Lett. **B707** (2012) 52, [arXiv:1109.0963](#).
- [388] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $B_s^0 \rightarrow K^{*0}\bar{K}^{*0}$* , Phys. Lett. **B709** (2012) 50, [arXiv:1111.4183](#).
- [389] LHCb collaboration, R. Aaij *et al.*, *Measurement of charged particle multiplicities in  $pp$  collisions at  $\sqrt{s} = 7$  TeV in the forward region*, Eur. Phys. J. **C72** (2012) 1947, [arXiv:1112.4592](#).
- [390] LHCb collaboration, R. Aaij *et al.*, *Measurement of the  $B_s^0 - \bar{B}_s^0$  oscillation frequency  $\Delta m_s$  in  $B_s^0 \rightarrow D_s^-(3)\pi$  decays*, Phys. Lett. **B709** (2012) 177, [arXiv:1112.4311](#).
- [391] LHCb collaboration, R. Aaij *et al.*, *Search for lepton number violating decays  $B^+ \rightarrow \pi^-\mu^+\mu^+$  and  $B^+ \rightarrow K^-\mu^+\mu^+$* , Phys. Rev. Lett. **108** (2012) 101601, [arXiv:1110.0730](#).
- [392] LHCb collaboration, R. Aaij *et al.*, *First observation of the decay  $\bar{B}_s^0 \rightarrow D^0 K^{*0}$  and a measurement of the ratio of branching fractions  $\frac{\mathcal{B}(\bar{B}_s^0 \rightarrow D^0 K^{*0})}{\mathcal{B}(\bar{B}^0 \rightarrow D^0 \rho^0)}$* , Phys. Lett. **B706** (2011) 32, [arXiv:1110.3676](#).
- [393] LHCb collaboration, R. Aaij *et al.*, *Measurement of the inclusive  $\phi$  cross-section in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, Phys. Lett. **B703** (2011) 267, [arXiv:1107.3935](#).
- [394] LHCb collaboration, R. Aaij *et al.*, *Determination of  $f_s/f_d$  for 7 TeV  $pp$  collisions and measurement of the  $B^0 \rightarrow D^- K^+$  branching fraction*, Phys. Rev. Lett. **107** (2011) 211801, [arXiv:1106.4435](#).

- [395] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $V^0$  production ratios in pp collisions at  $\sqrt{s} = 0.9$  and 7 TeV*, JHEP **08** (2011) 034, [arXiv:1107.0882](#).
- [396] LHCb collaboration, R. Aaij *et al.*, *Search for the rare decays  $B_s^0 \rightarrow \mu^+\mu^-$  and  $B^0 \rightarrow \mu^+\mu^-$* , Phys. Lett. **B699** (2011) 330, [arXiv:1103.2465](#).
- [397] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $J/\psi$  production in pp collisions at  $\sqrt{s} = 7$  TeV*, Eur. Phys. J. **C71** (2011) 1645, [arXiv:1103.0423](#).
- [398] LHCb collaboration, R. Aaij *et al.*, *First observation of  $B_s^0 \rightarrow J/\psi f_0(980)$  decays*, Phys. Lett. **B698** (2011) 115, [arXiv:1102.0206](#).
- [399] LHCb collaboration, R. Aaij *et al.*, *First observation of  $\bar{B}_s^0 \rightarrow D_{s2}^{*+} X \mu^- \bar{\nu}$  decays*, Phys. Lett. **B698** (2011) 14, [arXiv:1102.0348](#).
- [400] LHCb collaboration, R. Aaij *et al.*, *Measurement of  $\sigma(pp \rightarrow b\bar{b}X)$  at  $\sqrt{s} = 7$  TeV in the forward region*, Phys. Lett. **B694** (2010) 209, [arXiv:1009.2731](#).
- [401] LHCb collaboration, R. Aaij *et al.*, *Prompt  $K_S^0$  production in pp collisions at  $\sqrt{s} = 0.9$  TeV*, Phys. Lett. **B693** (2010) 69, [arXiv:1008.3105](#).
- [402] LHCb collaboration, *LHCb dimuon and charm mass distributions*, LHCb-CONF-2016-005.
- [403] LHCb collaboration, *Search for structure in the  $B_s^0 \pi^\pm$  invariant mass spectrum*, LHCb-CONF-2016-004.
- [404] LHCb collaboration, *Study of Cold Nuclear Matter effect with prompt  $D^0$  meson production in pPb collisions at LHCb*, LHCb-CONF-2016-003.
- [405] LHCb collaboration, *Measurement of the  $Z \rightarrow \mu\mu$  production cross-section at forward rapidities in pp collisions at  $\sqrt{s} = 13$  TeV*, LHCb-CONF-2016-002.
- [406] LHCb collaboration, *LHCb  $\gamma$  combination update from  $B \rightarrow DKX$  decays*, LHCb-CONF-2016-001.
- [407] LHCb collaboration, *Study of  $\psi(2S)$  production and cold nuclear matter effects in pPb collisions at  $\sqrt{s_{NN}} = 5$  TeV*, LHCb-CONF-2015-005.
- [408] LHCb collaboration, *First measurements of long-range near-side angular correlations in  $\sqrt{s_{NN}} = 5$  TeV proton-lead collisions in the forward region*, LHCb-CONF-2015-004.
- [409] LHCb collaboration, *Measurement of the  $B^0$  oscillation frequency  $\Delta m_d$  with  $B^0 \rightarrow D^{(*)-} \mu^+ \nu_\mu$* , LHCb-CONF-2015-003.
- [410] LHCb collaboration, *Angular analysis of the  $B_d^0 \rightarrow K^{*0} \mu^+ \mu^-$  decay*, LHCb-CONF-2015-002.
- [411] LHCb collaboration, *Study of the decay  $B^+ \rightarrow K^+ \pi^0$  at LHCb*, LHCb-CONF-2015-001.

- 1507 [412] LHCb collaboration, *Improved constraints on  $\gamma$ : CKM2014 update*, LHCb-CONF-  
1508 2014-004.
- 1509 [413] ALICE and LHCb collaborations, *Reference  $pp$  cross-sections for  $\Upsilon(1S)$  studies in  
1510 proton-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV and comparisons between ALICE and  
1511 LHCb results*, Aug, 2014. LHCb-CONF-2014-003 ; ALICE-PUBLIC-2014-002.
- 1512 [414] LHCb collaboration, *Measurement of the forward  $W$  boson cross-section in  $pp$   
1513 collisions at  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2014-002.
- 1514 [415] LHCb collaboration, *A search for heavy long-lived stau pair production in the LHCb  
1515 detector*, LHCb-CONF-2014-001.
- 1516 [416] ALICE and LHCb collaborations, *Reference  $pp$  cross-sections for  $J/\psi$  studies in  
1517 proton-lead collisions at  $\sqrt{s_{NN}} = 5.02$  TeV and comparisons between ALICE and  
1518 LHCb results*, Dec, 2013. LHCb-CONF-2013-013, ALICE-PUBLIC-2013-002.
- 1519 [417] CMS and LHCb collaborations, *Combination of results on the rare decays  $B_{(s)}^0 \rightarrow$   
1520  $\mu^+\mu^-$  from the CMS and LHCb experiments*, Jul, 2013. CMS-PAS-BPH-13-007,  
1521 LHCb-CONF-2013-012.
- 1522 [418] LHCb collaboration, *Updated average  $f_s/f_d$   $b$ -hadron production fraction ratio for  
1523 7 TeV  $pp$  collisions*, LHCb-CONF-2013-011.
- 1524 [419] LHCb collaboration, *Search for the  $\Lambda_b^0 \rightarrow \Lambda \eta'$  decay at LHCb*, LHCb-CONF-2013-  
1525 010.
- 1526 [420] LHCb collaboration,  *$CP$  and up-down asymmetries in  $B^\pm \rightarrow K^\pm \pi^\mp \pi^\pm \gamma$  decays*,  
1527 LHCb-CONF-2013-009.
- 1528 [421] LHCb collaboration, *Study of the  $J/\psi$  production cross-section in proton-lead colli-  
1529 sions at  $\sqrt{s_{NN}} = 5$  TeV*, LHCb-CONF-2013-008.
- 1530 [422] LHCb collaboration, *Measurement of the cross section for  $Z \rightarrow \mu^+\mu^-$  production  
1531 with  $1.0 \text{ fb}^{-1}$  of  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2013-007.
- 1532 [423] LHCb collaboration, *A measurement of  $\gamma$  from a combination of  $B^\pm \rightarrow DK^\pm$   
1533 analyses including first results using  $2 \text{ fb}^{-1}$  of 2012 data*, LHCb-CONF-2013-006.
- 1534 [424] LHCb collaboration, *Graphical comparison of the LHCb measurements of  $W$  and  $Z$   
1535 boson production with ATLAS and CMS*, LHCb-CONF-2013-005.
- 1536 [425] LHCb collaboration, *Model-independent measurement of  $CP$  violation parameters  
1537 in  $B^\pm \rightarrow (K_S^0 h^+ h^-)_D K^\pm$  decays*, LHCb-CONF-2013-004.
- 1538 [426] LHCb collaboration, *A search for time-integrated  $CP$  violation in  $D^0 \rightarrow K^- K^+$  and  
1539  $D^0 \rightarrow \pi^- \pi^+$  decays*, LHCb-CONF-2013-003.
- 1540 [427] LHCb collaboration, *Measurement of  $\sigma(b\bar{b})$  with inclusive final states*, LHCb-CONF-  
1541 2013-002.



- 1542 [428] LHCb collaboration, *Measurement of the forward-central  $b\bar{b}$  production asymmetry*  
1543 *at LHCb*, LHCb-CONF-2013-001.
- 1544 [429] LHCb collaboration, *First look at the pPb pilot run*, LHCb-CONF-2012-034.
- 1545 [430] LHCb collaboration, *Optimization and calibration of the same-side kaon tagging*  
1546 *algorithm using hadronic  $B_s^0$  decays in 2011 data*, LHCb-CONF-2012-033.
- 1547 [431] LHCb collaboration, *A measurement of  $\gamma$  from a combination of  $B^+ \rightarrow Dh^+$*   
1548 *analyses*, LHCb-CONF-2012-032.
- 1549 [432] LHCb collaboration, *Studies of  $\Lambda_b^0 \rightarrow J/\psi\Lambda$  production in pp collisions at  $\sqrt{s} =$*   
1550 *7 TeV*, LHCb-CONF-2012-031.
- 1551 [433] LHCb collaboration, *Search for the suppressed ADS modes  $B^\pm \rightarrow [\pi^\pm K^\mp \pi^+ \pi^-]_D K^\pm$*   
1552 *and  $B^\pm \rightarrow [\pi^\pm K^\mp \pi^+ \pi^-]_D \pi^\pm$* , LHCb-CONF-2012-030.
- 1553 [434] LHCb collaboration, *Measurement of the time-dependent CP-violation parameters*  
1554 *in  $B_s^0 \rightarrow D_s^\mp K^\pm$* , LHCb-CONF-2012-029.
- 1555 [435] LHCb collaboration, *Evidence for CP violation in  $B \rightarrow KK\pi$  and  $B \rightarrow \pi\pi\pi$  decays*,  
1556 LHCb-CONF-2012-028.
- 1557 [436] LHCb collaboration, *Search for the lepton flavour violating and baryon number*  
1558 *violating decays  $\tau^- \rightarrow \bar{p}\mu^+\mu^-$  and  $\tau^- \rightarrow p\mu^-\mu^-$* , LHCb-CONF-2012-027.
- 1559 [437] LHCb collaboration, *Performance of flavor tagging algorithms optimised for the*  
1560 *analysis of  $B_s^0 \rightarrow J/\psi\phi$* , LHCb-CONF-2012-026.
- 1561 [438] LHCb collaboration, *Production of  $J/\psi$  and  $\Upsilon(1S)$ ,  $\Upsilon(2S)$  and  $\Upsilon(3S)$  mesons at*  
1562  *$\sqrt{s} = 8$  TeV*, LHCb-CONF-2012-025.
- 1563 [439] LHCb collaboration, *Measurement of CP observables in  $B^0 \rightarrow DK^{*0}$  with  $D \rightarrow$*   
1564  *$K^+K^-$* , LHCb-CONF-2012-024.
- 1565 [440] LHCb collaboration, *Branching fraction measurements of  $B_{d,s}^0$  decays to  $K_S^0 hh'$  final*  
1566 *states, including first observation of  $B_s^0 \rightarrow K_S K\pi$* , LHCb-CONF-2012-023.
- 1567 [441] LHCb collaboration, *Measurement of the flavour-specific CP violating asymmetry*  
1568  *$a_{\text{sl}}^s$  in  $B_s^0$  decays*, LHCb-CONF-2012-022.
- 1569 [442] LHCb collaboration, *First observation of  $B^- \rightarrow D^0 K^- \pi^+ \pi^-$  decays to CP even*  
1570 *final states*, LHCb-CONF-2012-021.
- 1571 [443] LHCb collaboration, *Observation of  $\chi_b(3P)$  state at LHCb in pp collisions at*  
1572  *$\sqrt{s} = 7$  TeV*, LHCb-CONF-2012-020.
- 1573 [444] LHCb collaboration, *Search for CP violation in  $D^0 \rightarrow \pi^- \pi^+ \pi^+ \pi^-$  decays*, LHCb-  
1574 CONF-2012-019.
- 1575 [445] LHCb collaboration, *Evidence for CP violation in  $B \rightarrow K\pi\pi$  and  $B \rightarrow KKK$*   
1576 *decays*, LHCb-CONF-2012-018.

- 1577 [446] LHCb collaboration, *Search for the rare decays  $B_{(s)}^0 \rightarrow \mu\mu$  at the LHC with the*  
1578 *ATLAS, CMS and LHCb experiments*, LHCb-CONF-2012-017.
- 1579 [447] LHCb collaboration, *Measurement of jet production in  $Z^0/\gamma^* \rightarrow \mu^+\mu^-$  events at*  
1580 *LHCb in  $\sqrt{s} = 7$  TeV  $pp$  collisions*, LHCb-CONF-2012-016.
- 1581 [448] LHCb collaboration, *Search for the lepton flavour violating decay  $\tau^- \rightarrow \mu^+\mu^-\mu^-$* ,  
1582 LHCb-CONF-2012-015.
- 1583 [449] LHCb collaboration, *Search for (Higgs-like) bosons decaying into long-lived exotic*  
1584 *particles*, LHCb-CONF-2012-014.
- 1585 [450] LHCb collaboration, *Inclusive low mass Drell-Yan production in the forward region*  
1586 *at  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2012-013.
- 1587 [451] LHCb collaboration, *Measurement of the forward energy flow in  $pp$  collisions at*  
1588  *$\sqrt{s} = 7$  TeV with the LHCb experiment*, LHCb-CONF-2012-012.
- 1589 [452] LHCb collaboration, *Measurement of the cross-section for  $Z^0 \rightarrow e^+e^-$  production*  
1590 *in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2012-011.
- 1591 [453] LHCb collaboration, *Search for the rare decays  $B_s^0 \rightarrow \mu^+\mu^-\mu^+\mu^-$  and  $B_d^0 \rightarrow$*   
1592  *$\mu^+\mu^-\mu^+\mu^-$* , LHCb-CONF-2012-010.
- 1593 [454] LHCb collaboration, *First observations and branching fraction measurements of  $\overline{B}_s^0$*   
1594 *to double-charm final states*, LHCb-CONF-2012-009.
- 1595 [455] LHCb collaboration, *Differential branching fraction and angular analysis of the*  
1596  *$B^0 \rightarrow K^{*0}\mu^+\mu^-$  decay*, LHCb-CONF-2012-008.
- 1597 [456] LHCb collaboration, *Measurement of time-dependent  $CP$  violation in charmless*  
1598 *two-body  $B$  decays*, LHCb-CONF-2012-007.
- 1599 [457] LHCb collaboration, *First observation of  $B^+ \rightarrow \pi^+\mu^+\mu^-$* , LHCb-CONF-2012-006.
- 1600 [458] LHCb collaboration, *Search for the  $D^0 \rightarrow \mu^+\mu^-$  decay with  $0.9\text{ fb}^{-1}$  at LHCb*,  
1601 LHCb-CONF-2012-005.
- 1602 [459] LHCb collaboration, *Measurement of the direct  $CP$  asymmetry in the  $B_d^0 \rightarrow K^{*0}\gamma$*   
1603 *decay*, LHCb-CONF-2012-004.
- 1604 [460] LHCb collaboration, *Measurement of the ratio of branching fractions for  $B_s^0 \rightarrow \phi\mu\mu$*   
1605 *and  $B_s^0 \rightarrow J/\psi\phi$* , LHCb-CONF-2012-003.
- 1606 [461] LHCb collaboration, *Tagged time-dependent angular analysis of  $B_s^0 \rightarrow J/\psi\phi$  decays*  
1607 *at LHCb*, LHCb-CONF-2012-002.
- 1608 [462] LHCb collaboration, *Measurement of the effective  $B_s^0 \rightarrow K^+K^-$  lifetime*, LHCb-  
1609 CONF-2012-001.
- 1610 [463] LHCb collaboration, *Measurement of the relative cross-section  $\sigma(\chi_{c2})/\sigma(\chi_{c1})$  of*  
1611 *prompt  $\chi_c$  mesons using at LHCb*, LHCb-CONF-2011-062.

- [464] LHCb collaboration, *A search for time-integrated CP violation in  $D^0 \rightarrow h^- h^+$  decays*, LHCb-CONF-2011-061.
- [465] LHCb collaboration, *Measurement of the masses of the  $\Xi_b^-$  and  $\Omega_b^-$* , LHCb-CONF-2011-060.
- [466] LHCb collaboration, *Relative branching ratio measurements of charmless  $B^\pm$  decays to three hadrons*, LHCb-CONF-2011-059.
- [467] LHCb collaboration, *Measurements of the relative branching fractions of the  $B^\pm \rightarrow p\bar{p}K^\pm$  decay channel including charmonium contributions*, LHCb-CONF-2011-058.
- [468] LHCb collaboration, *Measurements of the relative and absolute branching fractions of the decays  $B_s^0 \rightarrow D_s^\mp K^\pm$  and  $B_s^0 \rightarrow D_s^- \pi^+$* , LHCb-CONF-2011-057.
- [469] LHCb collaboration, *Combination of  $\phi_s$  measurements from  $B_s^0 \rightarrow J/\psi\phi$  and  $B_s^0 \rightarrow J/\psi f_0(980)$* , LHCb-CONF-2011-056.
- [470] LHCb collaboration, *Measurement of the ratio of branching fractions  $\mathcal{B}(B_d \rightarrow K^{*0}\gamma)/\mathcal{B}(B_s \rightarrow \phi\gamma)$  with the LHCb experiment at  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2011-055.
- [471] LHCb collaboration, *Measurement of the Charm Mixing Parameter  $y_{CP}$  in Two-Body Charm Decays*, LHCb-CONF-2011-054.
- [472] LHCb collaboration, *Observations of Orbitally Excited  $B_{(s)}^{**}$  Mesons*, LHCb-CONF-2011-053.
- [473] LHCb collaboration, *Study of Triple Product Asymmetries in  $B_s \rightarrow \phi\phi$  decays*, LHCb-CONF-2011-052.
- [474] LHCb collaboration, *Measurement of  $\phi_s$  in  $B_s \rightarrow J/\psi f_0(980)$* , LHCb-CONF-2011-051.
- [475] LHCb collaboration, *Measurement of  $\Delta m_s$  in the decay  $B_s^0 \rightarrow D_s^-(K^+ K^- \pi^-)\pi^+$  using opposite-side and same-side flavour tagging algorithms*, LHCb-CONF-2011-050.
- [476] LHCb collaboration, *Tagged time-dependent angular analysis of  $B_s \rightarrow J/\psi\phi$  decays with  $337\text{ pb}^{-1}$  at LHCb*, LHCb-CONF-2011-049.
- [477] LHCb collaboration, *Measurement of the  $B_s^0 \rightarrow J/\psi K_s^0$  branching fraction*, LHCb-CONF-2011-048.
- [478] CMS and LHCb collaborations, *Search for the rare decay  $B_s^0 \rightarrow \mu^+ \mu^-$  at the LHC with the CMS and LHCb experiments*, LHCb-CONF-2011-047, CMS-PAS-BPH-11-019.
- [479] LHCb collaboration, *Measurement of the CP Violation Parameter  $\mathcal{A}_F$  in Two-Body Charm Decays*, LHCb-CONF-2011-046.
- [480] LHCb collaboration, *Search for  $X(4140)$  in  $B^+ \rightarrow J/\psi\phi K^+$* , LHCb-CONF-2011-045.

- 1649 [481] LHCb collaboration, *Evidence for the suppressed decay  $B^\pm \rightarrow (K^\mp \pi^\pm)_D K^\pm$* , LHCb-  
1650 CONF-2011-044.
- 1651 [482] LHCb collaboration, *Inclusive  $X(3872)$  production in  $pp$  collisions at  $\sqrt{s} = 7$  TeV*,  
1652 LHCb-CONF-2011-043.
- 1653 [483] LHCb collaboration, *Charmless charged two-body  $B$  decays at LHCb with 2011 data*,  
1654 LHCb-CONF-2011-042.
- 1655 [484] LHCb collaboration,  *$Z$  cross-section measurement at  $\sqrt{s} = 7$  TeV using the channel  
1656  $Z \rightarrow \tau\tau$* , LHCb-CONF-2011-041.
- 1657 [485] LHCb collaboration, *First observation of  $B_c^+ \rightarrow J/\psi \pi^+ \pi^- \pi^+$* , LHCb-CONF-2011-  
1658 040.
- 1659 [486] LHCb collaboration, *Updated measurements of  $W$  and  $Z$  production at  $\sqrt{s} = 7$  TeV  
1660 with the LHCb experiment*, LHCb-CONF-2011-039.
- 1661 [487] LHCb collaboration, *Angular analysis of  $B^0 \rightarrow K^{*0} \mu^+ \mu^-$* , LHCb-CONF-2011-038.
- 1662 [488] LHCb collaboration, *Search for the rare decays  $B_{(s)}^0 \rightarrow \mu^+ \mu^-$  with  $300 \text{ pb}^{-1}$  at LHCb*,  
1663 LHCb-CONF-2011-037.
- 1664 [489] LHCb collaboration, *Studies of beauty baryons decaying to  $D^0 p \pi^-$  and  $D^0 p K^-$* ,  
1665 LHCb-CONF-2011-036.
- 1666 [490] LHCb collaboration, *Analysis of  $\bar{B}_s^0 \rightarrow J/\psi (\pi^+ \pi^- \text{ and } K^+ K^-)$  and the first obser-  
1667 vation of  $J/\psi f_2'(1525)$* , LHCb-CONF-2011-035.
- 1668 [491] LHCb collaboration, *Average  $f_s/f_d$   $b$ -hadron production fraction for 7 TeV  $pp$   
1669 collisions*, LHCb-CONF-2011-034.
- 1670 [492] LHCb collaboration, *Measurement of the  $B^\pm$  production cross-section at LHCb*,  
1671 LHCb-CONF-2011-033.
- 1672 [493] LHCb collaboration, *A measurement of the ratio of branching fractions:  $\frac{\mathcal{B}(B^\pm \rightarrow DK^\pm)}{\mathcal{B}(B^\pm \rightarrow D\pi^\pm)}$   
1673 for  $D \rightarrow K\pi, KK, K\pi\pi\pi$  and  $K_S^0 \pi\pi$* , LHCb-CONF-2011-031.
- 1674 [494] LHCb collaboration, *Measurement of the Ratio of Branching Fractions  
1675  $\mathcal{B}(B^\pm \rightarrow J/\psi \pi^\pm)/\mathcal{B}(B^\pm \rightarrow J/\psi K^\pm)$  at  $\sqrt{s} = 7$  TeV with the LHCb Detector*, LHCb-  
1676 CONF-2011-030.
- 1677 [495] LHCb collaboration, *Time integrated ratio of wrong-sign to right-sign  $D^0 \rightarrow K\pi$   
1678 decays in 2010 data at LHCb*, LHCb-CONF-2011-029.
- 1679 [496] LHCb collaboration, *Measurement of  $b$ -hadron production fractions in 7 TeV centre-  
1680 of-mass energy  $pp$  collisions*, LHCb-CONF-2011-028.
- 1681 [497] LHCb collaboration, *Measurement of  $b$ -hadron masses with exclusive  $J/\psi X$  decays  
1682 in 2010 data*, LHCb-CONF-2011-027.
- 1683 [498] LHCb collaboration, *Measurement of the  $\psi(2S)$  production cross-section at  $\sqrt{s} =$   
1684  $7$  TeV in LHCb*, LHCb-CONF-2011-026.

- 1685 [499] LHCb collaboration, *Evidence for the decay  $B_s^0 \rightarrow J/\psi \bar{K}^{*0}$* , LHCb-CONF-2011-025.
- 1686 [500] LHCb collaboration, *First observations of the Cabibbo-suppressed decays  $\bar{B}^0 \rightarrow$*   
1687  *$D^+ K^- \pi^+ \pi^-$  and  $B^- \rightarrow D^0 K^- \pi^+ \pi^-$* , LHCb-CONF-2011-024.
- 1688 [501] LHCb collaboration, *A search for time-integrated CP violation in  $D^0 \rightarrow h^+ h^-$  decays*  
1689 *and a measurement of the  $D^0$  production asymmetry*, LHCb-CONF-2011-023.
- 1690 [502] LHCb collaboration, *Central exclusive dimuon production at  $\sqrt{s} = 7$  TeV*, LHCb-  
1691 CONF-2011-022.
- 1692 [503] LHCb collaboration, *Measurement of the  $X(3872)$  mass with first LHCb data*,  
1693 LHCb-CONF-2011-021.
- 1694 [504] LHCb collaboration, *A measurement of the cross-section ratio  $\sigma(\chi_{c2})/\sigma(\chi_{c1})$  for*  
1695 *prompt  $\chi_c$  production at  $\sqrt{s} = 7$  TeV in LHCb*, LHCb-CONF-2011-020.
- 1696 [505] LHCb collaboration, *First observation of the decay  $B_s^0 \rightarrow K^{*0} \bar{K}^{*0}$* , LHCb-CONF-  
1697 2011-019.
- 1698 [506] LHCb collaboration, *Measurement of the effective  $B_s^0 \rightarrow K^+ K^-$  Lifetime*, LHCb-  
1699 CONF-2011-018.
- 1700 [507] LHCb collaboration, *Measurement of the  $B_c^+$  to  $B^+$  production cross-section ratios*  
1701 *at  $\sqrt{s} = 7$  TeV in LHCb*, LHCb-CONF-2011-017.
- 1702 [508] LHCb collaboration, *Measurement of the  $\Upsilon(1S)$  production cross-section at  $\sqrt{s} =$*   
1703 *7 TeV in LHCb*, LHCb-CONF-2011-016.
- 1704 [509] LHCb collaboration, *Inclusive jets and dijets in LHCb*, LHCb-CONF-2011-015.
- 1705 [510] LHCb collaboration,  $\mathcal{B}(B_s^0 \rightarrow \psi(2S)\phi)/\mathcal{B}(B_s^0 \rightarrow J/\psi\phi)$ , LHCb-CONF-2011-014.
- 1706 [511] LHCb collaboration, *Measurement of the relative yields of the decay modes  $B^0 \rightarrow$*   
1707  *$D^- \pi^+$ ,  $B^0 \rightarrow D^- K^+$ ,  $B_s^0 \rightarrow D_s^- \pi^+$ , and determination of  $f_s/f_d$  for 7 TeV pp*  
1708 *collisions*, LHCb-CONF-2011-013.
- 1709 [512] LHCb collaboration, *W and Z production at  $\sqrt{s} = 7$  TeV with the LHCb experiment*,  
1710 LHCb-CONF-2011-012.
- 1711 [513] LHCb collaboration, *Measurement of direct CP violation in charmless charged*  
1712 *two-body B decays at LHCb*, LHCb-CONF-2011-011.
- 1713 [514] LHCb collaboration, *Measurement of  $\Delta m_d$  in  $B^0 \rightarrow D^-(K^+ \pi^- \pi^-) \pi^+$* , LHCb-  
1714 CONF-2011-010.
- 1715 [515] LHCb collaboration, *Observation of double  $J/\psi$  production in proton-proton colli-*  
1716 *sions at a centre-of-mass energy of  $\sqrt{s} = 7$  TeV*, LHCb-CONF-2011-009.
- 1717 [516] LHCb collaboration, *First observation of the decay  $\bar{B}_s^0 \rightarrow D^0 K^{*0}$  and measurement*  
1718 *of the ratio of branching fractions  $\frac{\mathcal{B}(\bar{B}_s^0 \rightarrow D^0 K^{*0})}{\mathcal{B}(\bar{B}_d^0 \rightarrow D^0 \rho^0)}$* , LHCb-CONF-2011-008.

- 1719 [517] LHCb collaboration, *Improved Measurements of the Cabibbo Favored Decays  $B_{(s)} \rightarrow$*   
1720  *$D_{(s)}\pi\pi\pi$  and  $\Lambda_b \rightarrow \Lambda_{c\pi\pi\pi}$  Branching Fractions*, LHCb-CONF-2011-007.
- 1721 [518] LHCb collaboration, *Tagged time-dependent angular analysis of  $B_s^0 \rightarrow J/\psi\phi$  decays*  
1722 *with the 2010 LHCb data*, LHCb-CONF-2011-006.
- 1723 [519] LHCb collaboration, *Measurement of  $\Delta m_s$  in the decay  $B_s^0 \rightarrow D_s^-(K^+K^-\pi^-)(3)\pi$ ,*  
1724 *LHCb-CONF-2011-005*.
- 1725 [520] LHCb collaboration, *Search for CP violation in  $B^0 \rightarrow J/\psi K_S^0$  decays with first*  
1726 *LHCb data*, LHCb-CONF-2011-004.
- 1727 [521] LHCb collaboration, *Flavor-untagged angular analysis of  $B_d^0 \rightarrow J/\psi K^*$  and  $B_s^0 \rightarrow$*   
1728  *$J/\psi\phi$  decays*, LHCb-CONF-2011-002.
- 1729 [522] LHCb collaboration, *b-hadron lifetime measurements with exclusive  $b \rightarrow J/\psi X$*   
1730 *decays reconstructed in the 2010 data*, LHCb-CONF-2011-001.
- 1731 [523] LHCb collaboration, *Measurement of the inclusive  $\phi$  cross-section in pp collisions*  
1732 *at  $\sqrt{s} = 7$  TeV with the LHCb experiment*, LHCb-CONF-2010-014.
- 1733 [524] LHCb collaboration, *Prompt charm production in pp collisions at  $\sqrt{s} = 7$  TeV*,  
1734 *LHCb-CONF-2010-013*.
- 1735 [525] LHCb collaboration, *Measurements of  $B^0$  mesons production cross-section in pp*  
1736 *collisions at  $\sqrt{s} = 7$  TeV using  $B^0 \rightarrow D^{*-}\mu^+\nu_\mu X$  decays*, LHCb-CONF-2010-012.
- 1737 [526] LHCb collaboration, *Measurement of prompt  $\bar{\Lambda}/\Lambda$  and  $\bar{\Lambda}/K_S^0$  production ratios in*  
1738 *inelastic non-diffractive pp collisions at  $\sqrt{s} = 0.9$  and 7 TeV*, LHCb-CONF-2010-  
1739 *011*.
- 1740 [527] LHCb collaboration, *Measurement of the  $J/\psi$  production cross-section at  $\sqrt{s} =$*   
1741 *7 TeV in LHCb*, LHCb-CONF-2010-010.
- 1742 [528] LHCb collaboration, *Measurement of the  $\bar{p}/p$  ratio in LHCb at  $\sqrt{s} = 900$  GeV and*  
1743 *7 TeV*, LHCb-CONF-2010-009.
- 1744 [529] LHCb collaboration, *Prompt  $K_S^0$  production in pp collisions at  $\sqrt{s} = 900$  GeV*,  
1745 *LHCb-CONF-2010-008*.

1746 The author list for journal publications is generated from the Membership Database  
1747 shortly after 'approval to go to paper' has been given. It will be sent to you by email  
1748 shortly after a paper number has been assigned. The author list should be included  
1749 already at first circulation, to allow new members of the collaboration to verify that they  
1750 have been included correctly. Occasionally a misspelled name is corrected, or associated  
1751 institutions become full members. Therefore an updated author list will be sent to you  
1752 after the final EB review of the paper. In case line numbering doesn't work well after  
1753 including the authorlist, try moving the `\bigskip` after the last author to a separate line.

1754 The authorship for Conference Reports should be "The LHCb collaboration", with  
1755 a footnote giving the name(s) of the contact author(s), but without the full list of  
1756 collaboration names.