

"CP violation effects in multibody B decays" on behalf of the LHCb Collaboration

Jeremy Dalseno*

HH Wills Physics Laboratory, University of Bristol E-mail: J.Dalseno@bristol.ac.uk

CP Violation is one of the necessary ingredients to produce the matter anti-matter asymmetry we observe in the Universe today. The LHCb experiment is a general purpose forward-spectrometer located along the LHC proton-proton collider at CERN and is ideally suited for the investigation of such phenomena. We present the latest results of 3-body charmless *B* decays where large local *CP* violating effects have been observed across various regions of the phase space [1,2]. These results are discussed in the light of recent theoretical developments that attempt to understand the origin of the large asymmetries [3] and their impact on future amplitude analyses. *References*

1] R. Aaij *et al.* (LHCb Collaboration), *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.

[2] R. Aaij *et al.* (LHCb Collaboration), *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.

[3] Z.-H. Zhang, X.-H. Guo, and Y.-D. Yang, Phys. Rev. D 87 (2013) 076007; B. Bhattacharya,
M. Gronau, and J. L. Rosner, Phys. Lett. B 726 (2013) 337; I. Bediaga, O. Lourenço, and T.
Frederico, Phys. Rev. D 89 (2014) 094013; D. Xu, G.-N. Li, and X.-G. He, arXiv:1307.7186 (2013).

Frontiers of Fundamental Physics 14 - FFP14, 15-18 July 2014 Aix Marseille University (AMU) Saint-Charles Campus, Marseille

*Speaker.