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THE SOFTWARE FRAMEWORK OF THE BELLE II SILICON VERTEX DETECTOR AND ITS DEVELOPMENT FOR THE 2016 TEST-BEAM AT DESY

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GIACOMO CARIA and PHILLIP URQUIJO, School of Physics, The University of Melbourne, VIC 3010

(on behalf of the Belle II SVD group)

In this poster, I shall give an overview of the reconstruction software for the Belle II Silicon Vertex Detector (SVD). The Belle II detector at the SuperKEKB e+e- collider in Tsukuba, Japan, aims to probe the flavour frontier, looking for new sources of CP violation. Construction will be completed in late 2018 to be ready for physics data taking. The SVD is a key component of the Belle II inner detector (Vertex Detector), comprised of four layers of double-sided silicon strip sensors. It is responsible for reconstructing trajectories of slow pions, for providing energy loss information for particle identification, and for an accurate determination of decay vertices such as those from K-short mesons. The SVD must therefore provide highly reliable, and precise charged particle hit information at an unprecedented luminosity (designed value 8 x 10ˆ35 cmˆ-2 sˆ-1).During April 2016 the SVD and the Pixel detector systems were tested at a DESY test-beam facility in Hamburg, Germany. In this exercise the performance of hardware design, data acquisition and software framework were studied, providing much needed insight for the completion of the detector modules and for their operation in Belle II. I shall discuss SVD software framework, focusing on the aspects that have been developed for the DESY test-beam as well as some aspects of full Belle II operation: such as the treatment of data quality issues in silicon strips, calibration of the charge read-out system, and hit clustering algorithms.

Author: Mr CARIA, Giacomo (University of Melbourne)

Co-author: Dr URQUIJO, Phillip (University of Melbourne)

Presenter: Mr CARIA, Giacomo (University of Melbourne)

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