

BELLE-II silicon vertex detector upgrade

BELLE II is an experiment in KEK (Tsukuba, Japan) that will explore heavy flavour physics (B, charm and tau) from early 2018 with unprecedented precision. Charged particles are tracked (going from the interaction point to the outside) by a two-layer DEPFET pixel device (PXD), a four-layer silicon strip detector (SVD) and the central drift chamber (CDC). The design and the construction of the SVD are challenging in many ways: The detector has about 200k analog channels, which are readout by about 5,000 APV25 ASICs. These frontend readout chips have a short shaping time of about 50 ns and thus can cope with the backgrounds expected at Belle II. At the same time, they are sensitive to capacitive noise, which requires that some of the chips are mounted in the active region of the detector. To minimise material in the acceptance region, carbon fibre structures and CO₂ cooling (to reduce the cooling pipe diameter) are used. In this talk, I will review the design of the Belle II SVD, the current state of the production and first results on the detector performance obtained in test beam experiments.

Primary author: SCHWANDA, Christoph (Austrian Academy of Sciences)

Presenter: SCHWANDA, Christoph (Austrian Academy of Sciences)