

# The Silicon Vertex Detector of the Belle-II Experiment

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After ten years of successful operation, the Belle experiment at KEK (Tsukuba, Japan) will be completed by the end of 2009. Thereafter, a major upgrade of the KEK-B machine is foreseen until 2013, aiming at a final luminosity of  $8 \times 10^{35} / (\text{cm}^2 \text{ s})$ , which is about 40 times higher than the present peak value. Consequently, also the Belle experiment needs to be changed and the Silicon Vertex Detector (SVD) in particular will be completely replaced as it already operates close to its limits in the present system.

The future SVD will consist of four layers of double-sided silicon strip detectors like the present one, but at higher radii, because it will be complemented by a two-layer Pixel Detector as the innermost sensing device. The future SVD will be entirely composed of silicon sensors made from 6" wafers read out by APV25 front-end chips that were originally made for the CMS experiment at the LHC.

Several years of R&D effort led to innovations such as the Origami chip-on-sensor concept and readout electronics with hit-time finding which were successfully demonstrated on prototypes. These features will be included in the final system which is presently being designed. This paper will give an overview of the future SVD and present results from prototype tests ranging from detector modules to back-end electronics.

## **Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):**

[http://friedl.hephy.at/misc/vci2010\\_friedl\\_synopsis.pdf](http://friedl.hephy.at/misc/vci2010_friedl_synopsis.pdf)

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