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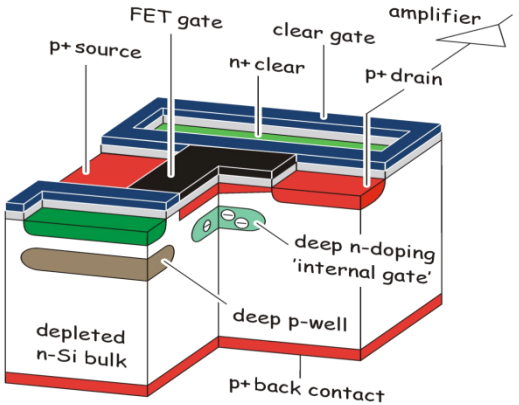
Charles University
Prague

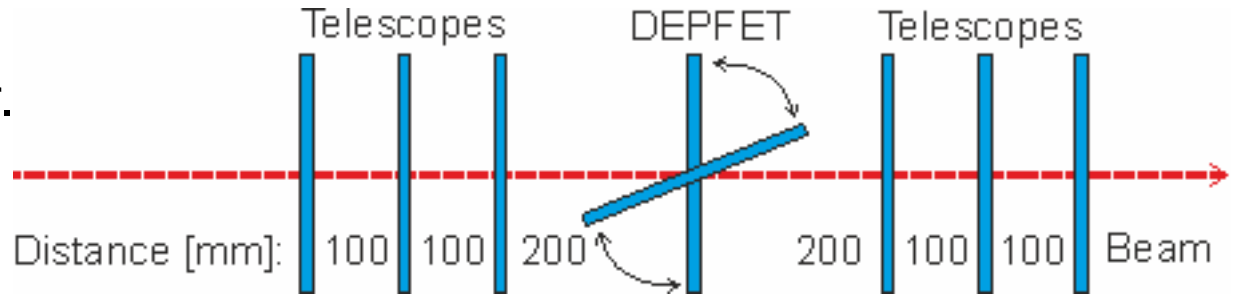
The DEPFET Active Pixels for Belle II - Resolution in 50 micron Thinned Sensor

Peter Kodyš, *On behalf of the DEPFET Collaboration*

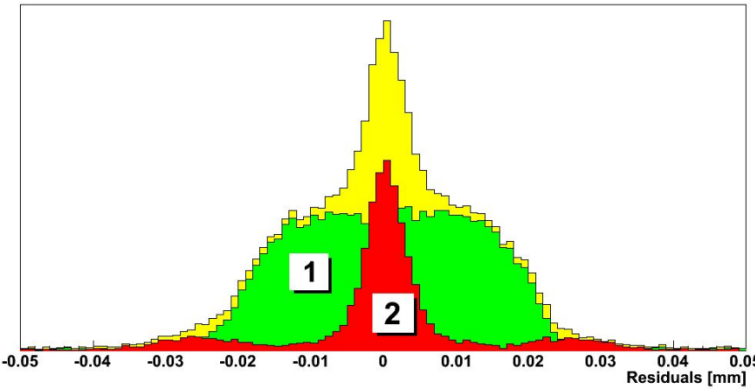


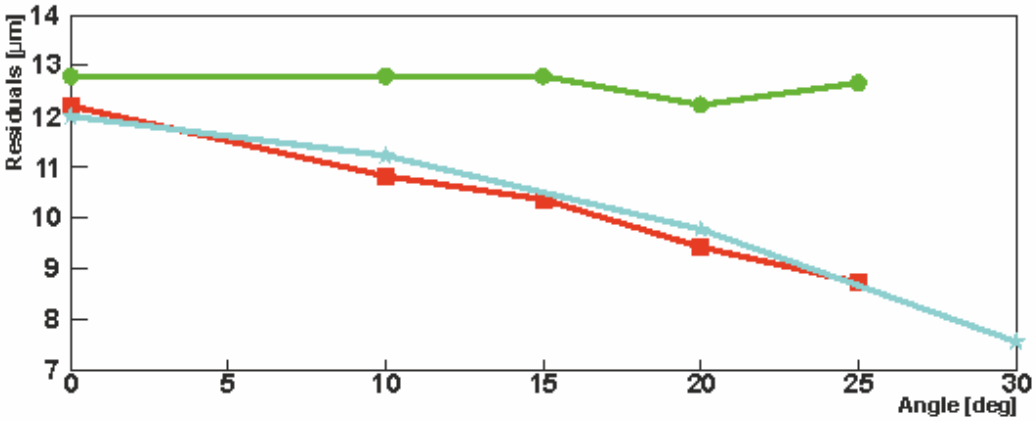
DEPFET - monolithic silicon active pixel sensors which do not require additional support or cooling structures in the active region of the detector. Spatial point resolutions below 10 μm are expected.

Beam test 2011 of thinned DEPFET in the beam test at the CERN SPS H6B area. The sensors tested were 50 μm thick with pixel sizes of 50 x 50 μm, gate length of 6 μm, depleted by punch-through and operated at 100 MHz. For tracking, 3 + 3 EUTEL telescope planes with Mimosa26 pixel sensors were used. The DEPFET matrix could be rotated relative to the beam direction in a wide range up to 75 degrees.



Residuals distribution for perpendicular tracks with single pixel response (1) and more than 1 pixel response (2) (linear vertical scale).





Residual width vs. incidence angle.
Squares: test beam, x direction (tilted)
Circles: test beam, y direction (not tilted)
Asterisks: MC simulation (tilted)
This contribution gives a slightly better result for the DEPFET properties than expected.

The exciting physics experiment **Belle II** is under preparation at KEK. The goal to **start data acquisition in 2015** seems realistic.

The **predicted resolution of the DEPFET modules** from simulations is now **confirmed by a beam test analysis**.