

## Test Beam Results of FBK pixel sensors for the Phase-2 CMS Tracker with the RD53A readout chip

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The High Luminosity upgrade of the CERN Large Hadron Collider (HL-LHC) will require new high-radiation tolerant silicon pixel sensors for the innermost layers of the CMS experiment tracking detectors, capable of withstanding fluences up to  $2.3 \times 10^{16}$  neq/cm<sup>2</sup> (1MeV equivalent neutrons). Results obtained in beam test experiments with FBK planar and 3D pixel sensors interconnected with the RD53A readout chip are reported. RD53A is the prototype in 65nm technology issued from RD53 collaboration for the future readout chip to be used in the upgraded pixel detectors. The interconnected modules have been tested on an electron beam at DESY, before and after irradiation, up to an equivalent fluence of  $1 \times 10^{16}$  neq/cm<sup>2</sup>. The sensors were made in the FBK foundry in Trento, Italy, and their development was done in collaboration with INFN (Istituto Nazionale di Fisica Nucleare, Italy). Analysis of collected data shows hit detection efficiencies around 99% measured after irradiation. All results are obtained in the framework of the CMS experiment R&D activities.

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