

## Laboratory characterization of 3D-trench silicon pixel sensors with a $^{90}\text{Sr}$ radioactive source

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In order to cope with the high luminosity phase conditions at the LHC experiments, the development of detectors with enhanced time resolution and radiation hardness is required. TimeSPOT, an INFN-funded project, has developed 3D-trench silicon pixel sensors able to achieve a very good time resolution for minimum ionizing particles. In 2019, these sensors were tested for the first time on a high-energy charged-particle beam at the Paul Scherrer Institut (PSI) and a time resolution of 20 ps was measured. In order to perform accurate time resolution measurements in our laboratory, a beam test like setup using a  $^{90}\text{Sr}$  beta emitter was built. The results obtained are in agreement with PSI beam test measurements, implying that such a setup is, at least for sensor time characterization, a valid alternative to high-energy charged-particles beam tests. This setup, together with the characterization of a TimeSPOT 3D pixel sensor, will be presented at the conference.

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