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Test beam results of an RSD2 450 um pitch matrix connected to a FAST2 ASIC

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This contribution reports on the spatial and temporal resolutions of an RSD 450-micron pitch pixels array measured at the DESY test beam facility. RSDs, Resistive Silicon Detectors, also known as AC-LGAD, achieve excellent position and temporal resolution by exploiting charge sharing among neighboring electrodes. The RSD matrix used in this study is part of the second FBK RSD production, RSD2, and it is composed of 450-microns pitch pixel with cross-shaped electrodes. A 7-pixel matrix was read out by the FAST2 ASIC, a 16-channel amplifier fully custom ASIC developed by INFN Torino using the 110 nm CMOS technology. The position resolution reached in this test is 15 microns, about 3.4% of the pitch. The temporal resolution achieved in this work is about 60 ps, dominated by the FAST2 resolution.

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