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Timing properties of the RD50-MPW2 HVCMOS chip

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The CERN-RD50 collaboration has been developing radiation hard High Voltage CMOS detector prototypes based on high resistivity substrate and large collection electrode, manufactured in LFoundry 150 nm process. In this contribution we will present measurements of timing properties of the RD50-MPW2 chip, which features an 8 x 8 matrix of active pixels with integrated analog front end and discriminator circuits that can be monitored by a fast oscilloscope.

Charge in the sensor was generated by short laser pulses and by beta electrons from Sr-90 source. In measurements with Sr-90, the timing response of the DUT was evaluated relative to a fast reference signal from an LGAD. Time walk and time resolution of the system were measured from the recorded waveforms and compared to detector response to charge injection with a pulse generator. Measurements were made with detectors before and after neutron irradiation.

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