Contribution ID: **37** Type: **not specified**

First experience with radiation-hard active sensors in 180 nm HV CMOS technology

Friday, 16 November 2012 11:10 (20 minutes)

We explore the concept of using a deep-submicron HV CMOS process to produce a drop-in replacement for traditional radiation-hard silicon sensors. Unlike fully integrated monolithic active pixel sensors (MAPS), such active sensors contain simple circuits, e.g. amplifiers and discriminators, but still require a traditional (pixel or strip) readout chip. This approach yields most of the advantages of MAPS (improved resolution, reduced cost and material budget, etc.), without the complication of full integration on a single chip.

After outlining the design of the HV2FEI4 test ASIC, characterization results, experience of standalone operation during CERN PS irradiations and first experience obtained with pixel and strip readout will be shown before discussing future prospects of active sensors.

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Session Classification: Irradiation Facilities, 3D and Pixel Detectors (joined with ATLAS PPS)