Characterization of Depleted Monolithic Active Pixel Detectors with High-Resistive CMOS Technology

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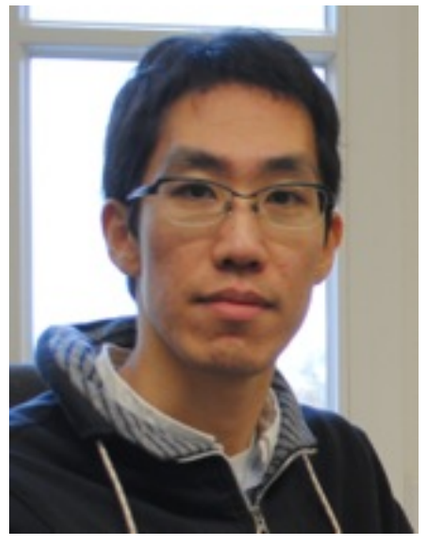
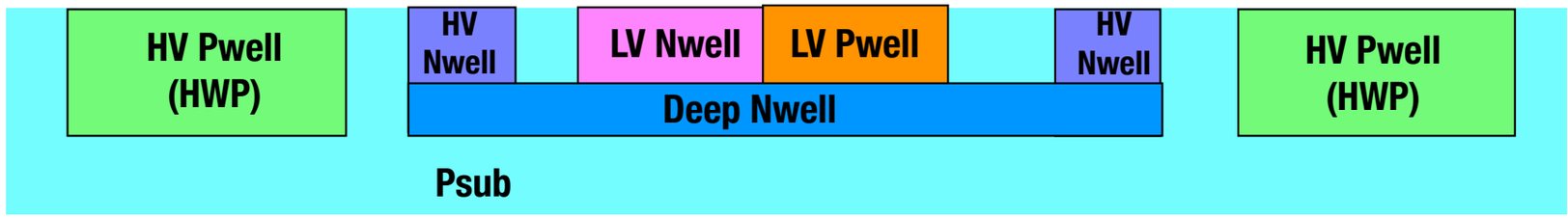
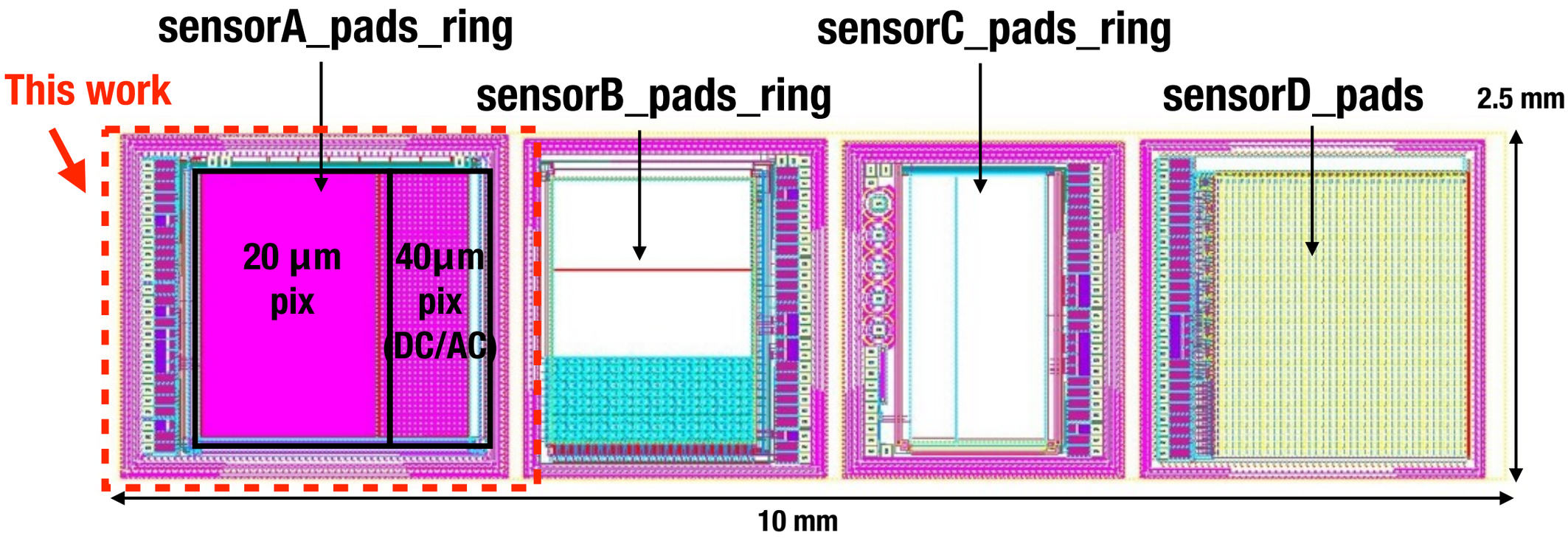


Technological overview

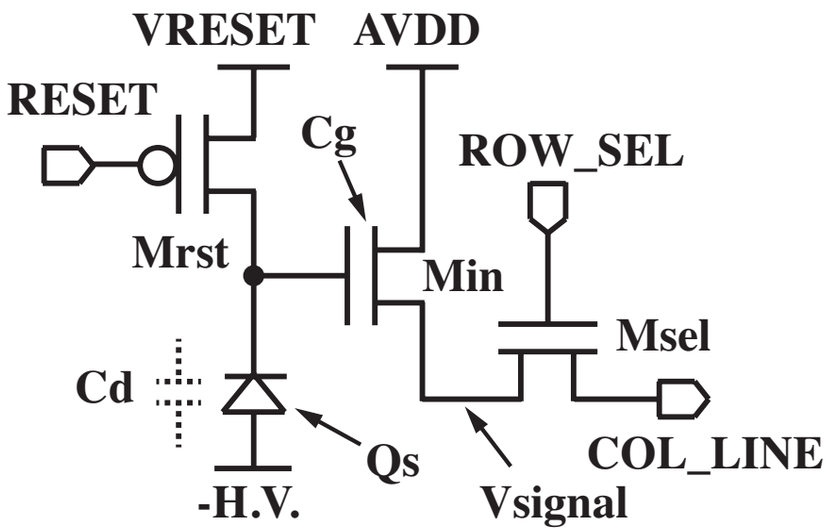
-Toshiba 130 nm CMOS process
-1.5 V core, 5 metals, high-R. p-substrate (~2 kΩ•cm)
-w/o backside processing→biasing from peripheral ring (DPW)

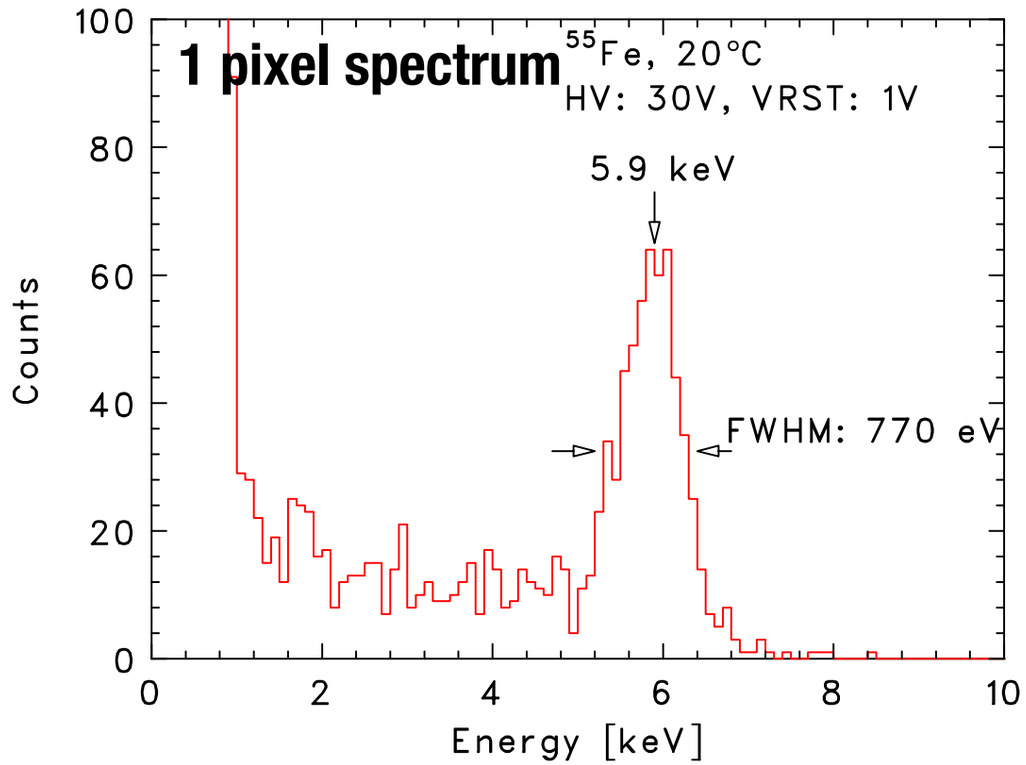


Layout of the prototype chip



3T readout and spectrum from ^{55}Fe

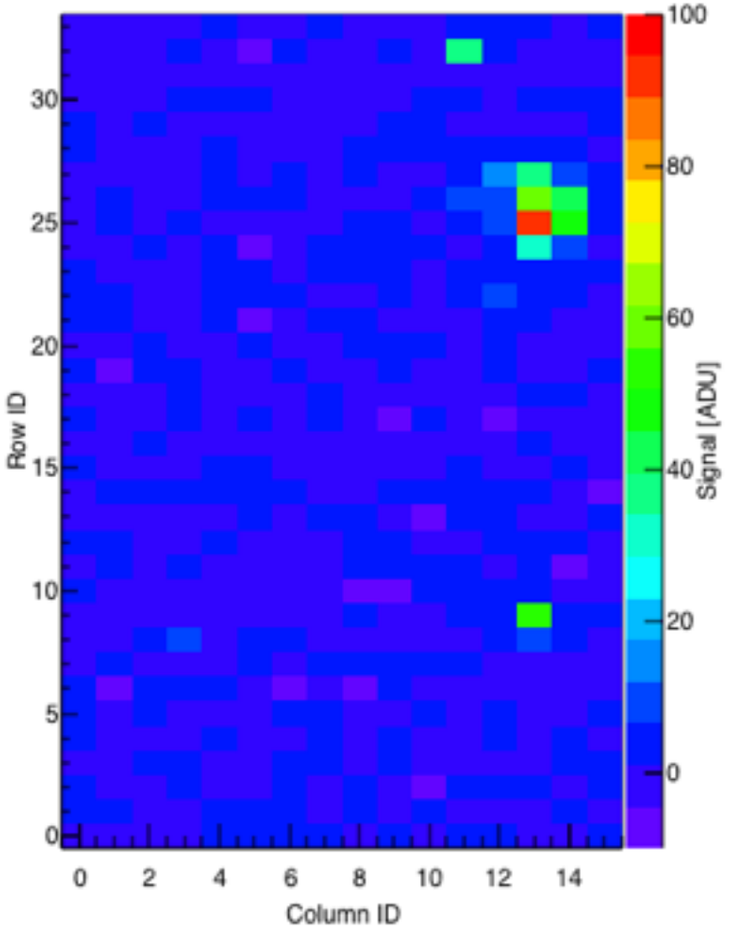


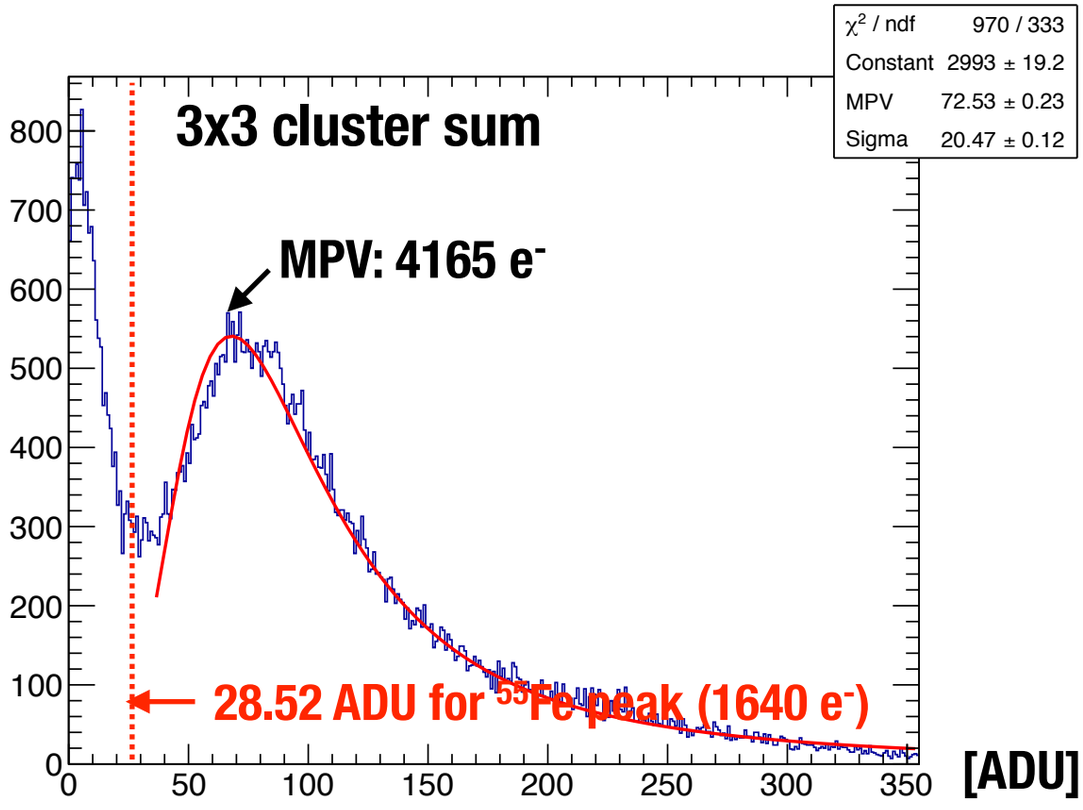


Input capacitance was estimated from ^{55}Fe peak.

Irradiation test with ^{90}Sr

cluster image





The depletion depth is ~50 um, assuming full charge collection.