

## High-Resolution Monolithic Pixel Detectors in SOI Technology

*Tuesday, 4 September 2012 14:00 (20 minutes)*

We are developing monolithic pixel detectors in 0.2  $\mu\text{m}$  Fully-Deleted SOI technology. In a SOI wafer, the photodiode is formed on the handling substrate after removing the silicon oxide. The SOI-CMOS circuits are fabricated on the 40-nm SOI thin film. Since the bump-bonding process is not required, a high-gain pixel sensor with smaller pixel size less than 20  $\mu\text{m}$  is achievable. In general SOI-CMOS circuits have less parasitic capacitance and thus higher speed readout system compared with bulk-CMOS ones can be composed. Such detectors can be applied to a wide range of applications, not only in particle physics but also in medicine, space science and many other disciplines. We have recently developed several versions of integration-type pixel detectors with 8-17  $\mu\text{m}$  pixel sizes. The detectors were irradiated with visible laser, infrared laser, X-ray and ionizing radiation sources. In this talk, the recent progress of the detector development, the performance of the detectors, test results in imaging applications are presented.

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