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Radiation hardness of silicon-on-insulator pixel device

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The SOI technology is very attractive realizing high-performance monolithic pixel devices. The TID tolerance has been a major issue in applications, as the positive charges accumulated in the oxide layers deteriorate the performance of the nearby FETs. With use of the innovative double-SOI, the TID effect is shown to be compensated by applying negative voltages to the middle layer. We fabricated a pixel sensor for demonstration and succeeded in operating the pixel device irradiated up to 1 MGy.

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