

Surface-Barrier Nuclear Particle Detectors Made of High-Purity P-Type Silicon Crystals

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Abstract. Silicon surface-barrier radiation detectors were prepared from p-type crystals using different technological procedures. The detector chips ($5 \times 5 \text{ mm}^2$) were fabricated with circular aluminium input electrodes with a diameter of 3 mm. The detectors were characterised by measuring the current-voltage ($I - V$) and capacitance-voltage ($C - V$) characteristics, as well as by evaluating their energy resolution using alpha radiation. The best achieved resolution, measured with $^{239}\text{Pu} + ^{238}\text{Pu} + ^{244}\text{Cm}$ alpha radiation source, was about 20 keV.