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Development of CENS silicon sensor and STARK commisioning at RAON

The Silicon Telescope Array for Reaction studies in Inverse Kinematics (STARK) is currently in development at the Center for Exotic Nuclear Studies. Its primary objective is to conduct comprehensive nuclear reaction experiments, encompassing elastic scattering and neutron transfer reactions. The array comprises 40 double-sided, resistive silicon strip detectors, as well as 12 single-sided, non-resistive strip detectors. These detectors are strategically organized into three concentric rings, collectively providing extensive angular coverage for experimental investigations.

In this study, we designed PN-junctions with high electric fields on n-type substrates to operate single-sided strip detectors which can be installed in the STARK detector array, capable of withstanding breakdown even at approximately 200 volts while maintaining low leakage current. Additionally, we designed and fabricated sensors with 8 channels over a wide area of approximately $77 \times 42 \text{ mm}^2$. The design and test results for various in-house multi-channel silicon strip sensors fabricated in Korea. Development of CENS silicon sensor and STARK commisioning at RAON will be presented.

Notes

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