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Development and characterization of new position-sensitive silicon strip detectors at CENS

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Direct reaction experiments in inverse kinematics are one of the best experimental tools to study a wide range of nuclear properties, providing a great probe into the nuclear structure of exotic nuclei and enabling the measurement of reactions relevant to many astrophysical scenarios. In order to fully exploit the next generation of radioactive ion beam facilities currently under development, the CENS group has devoted a large amount of effort to develop nuclear detectors, such as ATOM-X Active Target TPC and STARK Silicon Telescope Array, specially designed for direct reaction experiments. An instrumental part of these detectors is the Micron X6 position-sensitive double sided silicon strip detector. This custom-made detector is segmented in 4 strips on its ohmic side and 8 resistive charge-splitting strips on its junction side providing excellent position measurement of charged particles with a much smaller number of signals than traditional DSSSD with similar position resolution.

Detailed specifications of these detectors, optimized initial characterization methods and preliminary reports of their performance in terms of energy and position resolution will be presented.

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