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Development of tracking detectors for light secondary exotic beams CHRISTINA GAY, JOLIE CIZEWSKI, Rutgers Univ., STEVEN PAIN, MICHAEL FEBBRARO, Oak Ridge Nat'l Lab. , FREDERIC SARAZIN, Colorado School of Mines, RAYMOND KOZUB, Tennessee Technological Univ., KYLE SCHMITT, Univ., of Tennessee, DAVID WALTER, Rutgers Univ., DOMINIC ROBE, TRAVIS JOHNSON, Tennessee Technological Univ., BRETT MANNING, Rutgers Univ., SERGEY ILYUSHKIN, PATRICK O'MALLEY, Colorado School of Mines, CENTER OF EXCELLENCE FOR RADIOACTIVE ION BEAM STUDIES FOR STEWARDSHIP SCIENCE TEAM — Understanding of the single-particle structure of radioactive nuclei is important both for discerning the evolution of nuclear structure away from stability, and to provide an indirect constraint on reaction rates in astrophysical environments. Single-nucleon transfer reaction experiments measured in inverse kinematics, probe the single-particle structure away from stability. Some of the most intense beams currently available are produced through the in-flight technique, at facilities such as TwinSol at Notre Dame and the NSCL. However, in-flight beams suffer from poor emittance, typically resulting in large beam spot sizes that impact the angular resolution, and hence center-of-mass energy resolution. This limitation can be diminished through the use of multi-wire gas-filled tracking detectors placed upstream of the target, enabling event-by-event measurement of the beam particle trajectories, thereby reducing the effective beam spot size. Details of the tracking detector and prototype testing will be presented. This work is supported in part by the U.S. DOE and NSF.

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