

Abstract Submitted
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Development of SOLSTISE: A Supersonic Gas Jet Target for Solenoidal Spectrometers¹ MATTHEW HALL, KELLY CHIPPS, Oak Ridge National Lab, MIA GRACE CANTRELL, University of Tennessee Knoxville, STEVE PAIN, Oak Ridge National Lab, HOLLY STEMPE, University of Surrey — The SOLenoid and Supersonic Target in Structure Experiments (SOLSTISE) is a gas jet target currently under development at Oak Ridge National Laboratory, designed for use inside the solenoidal spectrometer SOLARIS at the Facility for Rare Isotope Beams. Experiments utilizing solid targets often have increased backgrounds from unwanted reactions on contaminants and suffer from worsened energy resolution due to energy loss straggling in the target material. In addition, the kinematic compression introduced when measuring transfer reactions in inverse kinematics with traditional silicon detector setups amplifies these issues. SOLSTISE and SOLARIS offer a unique solution to both problems, making their combination the ideal setup for many potential measurements of reactions on exotic nuclei. Rapid part fabrication via additive manufacturing has allowed SOLSTISE to be designed to minimize particle shadowing from the gas piping infrastructure while reducing background pressures, and nitrogen jet densities up to 5×10^{18} atoms/cm² have been demonstrated. Current designs and simulation data will be presented.

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