Abstract Submitted
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Development of an Active Target Time Projection Chamber for Nuclear Reaction Studies with Radioactive Isotope Beams MICHAEL FORD, NSCL/MSU, DANIEL BAZIN, NSCL, WILLIAM LYNCH, WOLFGANG MITTIG, NSCL/MSU, DAISUKE SUZUKI, NSCL, AT-TCP COLLABORATION — An Active Target Time Projection Chamber (AT-TPC) is being developed at the NSCL. This new detector uses the gas of a time projection chamber as an active target, providing powerful new capabilities for studying reactions induced by radioactive rare isotope beams. The detector design encompasses a dual gas system, providing one gas optimized for electrical isolation of the field cage and another that serves as the target. For versatile use of targets, the detector should operate with a wide range of target gasses including H_2, D_2, ^{3,4}He and Ne at pressures ranging from .2 to 1.0 atm and electric fields up to 1 kV/cm. Gas amplification and signal detection will be achieved with planar Micromegas structures mounted at the end of the gas detector volume. The Micromegas anode plane will be segmented into approximately 10,000 pads and read out by GET advanced active target electronics that are being developed in collaboration with French and Japanese institutes. I will be presenting the current status of the research and development of the AT-TPC and its prototype.

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