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Commissioning of the AT-TPC in SOLARIS with the ^{10}Be(d,p) reaction DANIEL BAZIN, JIE CHEN, Michigan State Univ — The prospect of newly developed stable and long-lived radioactive beams at energies close to 10 MeV/u from the upgraded ReA6 re-accelerator at FRIB opens the door to many new opportunities. In this talk we will present a proposal to study several reactions simultaneously using a ^{10}Be beam at 10 MeV/u. Three reaction channels, ^{10}Be(d,p), ^{10}Be(d,d) and ^{10}Be(d,t) will be detected simultaneously in the AT-TPC placed in the large bore solenoid of the future SOLARIS project. This effort is the first attempt to use an active target detector to study transfer reactions. Due to its large acceptance and target thickness, the required beam intensity to achieve the scientific goals of this experiment is only 2 kHz. The ^{10}Be(d,p) reaction will populate bound and unbound states in ^{11}Be, with particular interest towards a 3.41 MeV state for which the parity is still unknown. The ^{10}Be(d,t) will populate unbound states in ^{9}Be that can decay via double α emission. The tracking capability of the AT-TPC will allow to observe the two α resulting from the ^{8}Be breakup as well as their angular correlation. The possibility to perform transfer reaction measurements at that intensity level will open many new exciting prospects with the soon-to-be available rare isotope re-accelerated beams of FRIB.

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