

Abstract Submitted
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Probing Exotic, Particle-Decay Isotopes: A New Application of the Recoil Distance Method¹ P. VOSS, P. ADRICH, T. BAUMANN, D. BAZIN, D. ENDERICH, D. MILLER, R. NORRIS, S. PROGOVAC, A. RATKIEWICZ, A. SPYROU, K. STAROSTA, M. THOENNESSEN, C. VAMAN, National Superconducting Cyclotron Laboratory/Michigan State University, A. DEWALD, H. IWASAKI, IKP Koeln — The application of the Recoil Distance Method (RDM) with the NSCL/Köln plunger [1] has proven useful in the study of picosecond-lifetime excited states of rare isotopes at the NSCL [2]. With precise control over target/degrader separation distances on the micrometer scale, replacing the passive degrader with an active silicon detector provides a new probe at fast beam fragmentation facilities for studies of exotic particle-decay isotopes with picosecond lifetimes along the proton drip line. A recent experiment at the NSCL utilized this resulting NSCL/Köln “particle plunger” in a lifetime study of the two-proton emitter ^{19}Mg , produced by the one-neutron knockout of a ^{20}Mg secondary beam. The method and preliminary results for this commissioning particle plunger RDM investigation will be presented. [1] A. Dewald *et al.*, GSI Scientific Report 2005, p. 38 (2006). [2] K. Starosta *et al.*, Phys. Rev. Lett. **99**, 042503 (2007).

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