Abstract Submitted
for the APR18 Meeting of
The American Physical Society

A Radio-Frequency Kicker for the study of exotic nuclei[1] ANDREW ROGERS, Dept. of Physics and Applied Physics, University of Massachusetts Lowell, Lowell MA 01854, D. BAZIN, National Superconducting Cyclotron Laboratory, Michigan State University, East Lansing MI 48824, P.N. OSTROUMOV, A. PLASTUN, Facility for Rare Isotope Beams (FRIB), Michigan State University, East Lansing MI 48824, L.G. SOBOTKA, Dept. of Chemistry and Physics, Washington University, St. Louis MO 63130 — Exploring nuclei at the limits of stability and beyond strongly impacts our understanding of nuclear astrophysics, weak-interaction physics, and nuclear structure. Facilities based on projectile fragmentation rely on multiple stages of filtering in order to transport and selectively deliver these rare isotopes with the required purity to the experiment for study. However, for beams of neutron-deficient nuclei, it is often not possible to sufficiently filter certain fragmentation products using only magnetic and energy-loss techniques. Measurements using an existing Radio Frequency Fragment Separator (RFFS) at NSCL highlight the necessity of such a device to successfully pursue science at the proton drip line. In particular, a recent RFFS experiment was performed to investigate the 72Kr rp-process waiting point by measuring beta-delayed protons from the 73Rb nuclear sandbar. Without the additional purification factor of 4500 due to the RFFS, the experiment would not have been feasible. Similarly, to fully realize the scientific program at FRIB a new RFFS will be required. In this talk a potential proposal for such a device will be discussed.

[1]This work is supported by the U.S. DOE Office of Nuclear Physics, Contract No. DE-FG02-94ER40848.

Andrew Rogers
Dept. of Physics and Applied Physics, Univ., of Massachusetts Lowell

Date submitted: 16 Jan 2018 Electronic form version 1.4