Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Electromagnetic Transition Strengths in ^{27}Ne CHARLES LOELIUS, HIRONORI IWASAKI, KENNETH WHITMORE, MARA GRINDER, ROBERT ELDER, ERIC LUNDERBERG, BRANDON ELMAN, BRENDEN LONGFELLOW, ALEXANDRA GADE, DANIEL BAZIN, Michigan State University/National Superconducting Cyclotron Laboratory, DIRK WEISSHAAR, PETER BENDER, JOE BELARGE, National Superconducting Cyclotron Laboratory, NOBU KOBAYASHI, RCNP, Osaka, MARINA PETRI, York, TU Darmstadt, SEBASTIAN HEIL, MICHAEL MATHY, INA SYNDIKUS, ALEXANDER HUFNAGEL, TU Darmstadt — Previous measurements have established that halo nuclei are well characterized by their electromagnetic properties, with the E1 transition strengths reflecting a large neutron radius, and M1 transition strengths characterizing the dominant s wave strength. The $1/2^+$ excited state of ^{27}Ne is close to the neutron separation energy and is expected to have a single valence neutron in the s orbital, and therefore has the potential to exhibit halo effects. Furthermore, neighboring isotopes ^{26}Ne, ^{28}Ne demonstrate substantial deformation, so that ^{27}Ne should serve as an excellent benchmark for investigating the interplay between halo and deformation effects. We present here results of a new measurement of the lifetime of the ^{27}Ne $1/2^+$ excited state, performed at the NSCL using the Recoil Distance Method with the TRIPLEX Plunger in conjunction with GRETINA. In addition, a Coulomb-excitation measurement of ^{27}Ne has been performed using a novel application of the TRIPLEX plunger. The resulting transition strengths have been extracted and their implications are discussed.

Charles Loelius
Michigan State University/National Superconducting Cyclotron Laboratory

Date submitted: 28 Jun 2016 Electronic form version 1.4