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Examining the interplay between halo effects and deformation in neutron rich neon isotopes CHARLES LOELIUS, HIRONORI IWASAKI, DANIEL BAZIN, ROBERT ELDER, BRANDON ELMAN, ALEXANDRA GADE, MARA GRINDER, BRENDEN LONGFELLOW, ERIC LUNDERBERG, Michigan State University/National Superconducting Cyclotron Laboratory, SEBASTIAN HEIL, ALEXANDER HUFNAGEL, MICHAEL MATHY, INA SYNDIKUS, TU Darmstadt, NOBU KOBAYASHI, Osaka University, RCNP, JOE BELARGE, PETER BENDER, DIRK WEISSHAAR, National Superconducting Cyclotron Laboratory, MARINA PETRI, University of York, TU Darmstadt, KENNETH WHITMORE, Simon Fraser University — ^{27}Ne serves as an excellent test case for understanding the interplay between halo effects and deformation. It is known that the neighboring isotopes ^{26}Ne and ^{28}Ne demonstrate substantial deformation, which indicate a potential for deformation in ^{27}Ne. At the same time, the 1/2+ excited state is expected to have a single valence neutron in the s orbital near the neutron separation energy and therefore is expected to exhibit halo effects. Due to the interplay between the halo and deformation effects, the *M1* transition strength, which is expected to be large because of the deformation, could be severely reduced, while the *E1* transition strength is expected to be large. To examine this effect, precise knowledge of transition rates is required. In this work, the model-independent Recoil Distance Method was employed with fast RI beams to constrain the lifetime of the 1/2+ state down to the lowest achievable limits of precision.

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