Abstract Submitted
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**Lifetime Measurement of Low-lying States in $^{19}$C** KENNETH WHITMORE, HIRONORI IWASAKI, NSCL/MSU, DUANE SMALLEY, NSCL, CHRIS MORSE, CHARLES LOELIUS, VINCENT BADER, NSCL/MSU, DANIEL BAZIN, JILL BERRYMAN, NSCL, ALEXANDRA GADE, NSCL/MSU, CHRISTOPH LANGER, FRANCESCO RECCHIA, NSCL, RAGNAR STROBERG, NSCL/MSU, DIRK WEISSHAAR, NSCL, ANTOINE LEMASSON, GANIL, CHRIS CAMPBELL, PAUL FALLON, I-YANG LEE, AUGUSTO MACCHIAVELLI, LBNL, KATHRIN WIMMER, Central Michigan University, JOHN PARKER, Florida State University — Halo nuclei are unique phenomena occurring along the neutron dripline in which the wave function of the valence neutron extends far beyond the nuclear core. $^{19}$C is known to be a one-neutron halo with a ground-state spin and parity of $1/2^+$. Previous experiments have observed two gamma transitions at 197 keV and 72 keV, suggesting two excited states below the neutron separation energy of 580(90) keV. However, lifetime information is missing, and a level scheme has not been firmly established. A more recent experiment has called into question the bound nature of the second excited state. Lifetimes of the excited states of $^{19}$C have been measured at the NSCL using the lineshape technique. Gamma rays emitted in-flight were detected by GRETINA in coincidence with particles in the S800 spectrometer. Results on the lifetime of the 197 keV transition as well as evidence for the 72 keV transition will be discussed.

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