Abstract Submitted
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A Search for the 12Be Isomeric State[1] XINYI WANG, Michigan State University, MONA COLLABORATION — The spectroscopy of the neutron unbound 13Be is key to understanding the unexpected structural changes of neutron-rich nuclei around N=8. Invariant mass spectra from current experiments cannot determine the $1/2^-$ p-wave location. This p-wave resonance is expected to strongly decay to a long-lived 0_2^+ state in 12Be with a mean lifetime of 331(12) ns. Its decay scheme has a 20% branch through the 12Be(2^+) to the ground state (2.1 MeV) and 80% for an E0 transition giving two 511 keV gamma rays from positron annihilation. A new experiment has been performed by the MoNA Collaboration at the NSCL to study the neutron decay of 13Be to this isomeric state in 12Be. This experiment features a sweeperless MoNA-LISA setup, with a new telescope detector for 12Be fragment, 96 modules of the MoNA-LISA detector for neutrons emitted, and the gamma ray detector CAESAR, placed around the telescope instead of the reaction target due to the long lifetime of the expected isomer. A digital data acquisition system (DDAS) was applied to fragment, beam and gamma detectors, and synchronized with MoNA-LISA VME based electronics to get coincidence of all the decay products. An overview of the experiment will be presented and discussed.

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