Abstract Submitted
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Application of $CeBr_3$ Scintillator Crystals for Sub-Nanosecond Lifetime Measurements[1] N. D'OLYMPIA, S. LAKSHMI, P. CHOWDHURY, E. JACKSON, UMass Lowell, Lowell MA, J. GLODO, K. SHAH, RMD Inc., Watertown MA — Ongoing efforts in the development of next generation radiation detectors has yielded several new scintillation crystals with gamma ray detection properties superior to more traditional materials. Amongst these so-called "super" scintillators is $CeBr_3$, which exhibits fast timing properties similar to that of $LaBr_3$ and BaF_2, as well as excellent energy resolution. The time resolution of $CeBr_3$ detectors has been found to be as low as 120 ps in coincidence measurements. We are currently investigating the use of $CeBr_3$ detectors for research in basic and applied nuclear physics involving fast timing measurements. In the work presented here, a pair of $CeBr_3$ detectors have been used to directly measure the half-life of a 1.48 ns isomer in ^{152}Sm using the delayed coincidence technique and a multi-parameter data acquisition system. Further work is underway to apply this method for measuring sub-nanosecond lifetimes in isotopes created through thermal neutron capture at the UMass Lowell research reactor.

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