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Improved DSAM measurements in ^{10}Be as a test of Ab-Initio calculations E.A. MCCUTCHAN, C.J. LISTER, M.P. CARPENTER, R.V.F. JANSSENS, T.L. KHOO, T. LAURITSEN, D. SEWERYNIAK, I. STEFANESCU, S. ZHU, Argonne National Laboratory — Recent ab-initio calculations in light nuclei have emphasized the significance of 3-body forces. In the A = 10 systems, the inclusion of 3-body forces inverts the sequence of states, which has been attributed to the important contribution of the 3-body interaction to the overall spin orbit force. To challenge these latest calculations, a new generation of improved DSAM measurements is necessary to precisely (<5%) determine matrix elements between excited states. Lifetimes of excited levels in ^{10}Be, populated in the ^{7}Li(^{7}Li,α) reaction, are determined using high velocity DSAM measurements. The recoiling ^{10}Be were detected at zero degrees using the Argonne Fragment Mass Analyzer (FMA) and γ rays measured with Gammasphere, the combination allowing for the collection of very clean γ-ray spectra and the elimination of cascade feeding. Preliminary results of the experiment will be presented and discussed in terms of recent ab-initio calculations. This research is supported by the DOE Office of Nuclear Physics under contract DE-AC02-06CH11357.

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