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Nuclear structure studies in the A=136 mass region using transfer reactions.

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Abstract content
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Presently there is a great deal of interest to experimentally observe neutrinoless double beta (0νββ) decays. This exotic decay mode can only be observed in a few isotopes over the nuclear chart. An observation of 0νββ decay would signify physics beyond the standard model and the decay rate can be used to determine the absolute scale of neutrino masses. A major difficulty in extracting the effective neutrino mass from the decay lifetime arises from the uncertainties associated with the matrix element calculated for the decay. One of the most promising candidate for observing this decay mode is the decay of ¹³⁶Xe to ¹³⁶Ba. There are several experiments planned world-wide to observe the 0νββ in ¹³⁶Xe. In this talk I present preliminary results from the ¹³⁸Ba(d,a) reaction used to study low lying excited states in ¹³⁶Cs, which is the intermediate nucleus in ¹³⁶Xe 0νββ decay. I will also discuss future plans to study neutron pairing in the daughter ¹³⁶Ba nucleus via the ¹³⁸Ba(p,t) reaction using the same approach. Our results will provide useful spectroscopic information for the matrix element calculations in this mass region.

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and his / her institution

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