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Nuclear structure studies relevant to double beta decay of 136Xe

In addition to establishing the Majorana nature of neutrinos, obtaining the absolute neutrino mass scale is now the focus of several large-scale neutrinoless double beta decay experiments. The current challenge in determining the neutrino mass accurately depends on the calculation of nuclear matrix elements (NME's) in the select nuclei where these decays can take place. It is well known that the dominating uncertainties in the calculated NME values arise from the model dependence of these calculations.

In this talk, we will present some recent experimental results using high-resolution spectroscopy from 136,138Ba(p,t) and 138Ba(d,a) reactions that will be useful for future NME calculations for the double beta decay of 136Xe -> 136Ba.

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