

Nuclear structure studies relevant for ^{136}Xe neutrinoless double beta decay

The search for neutrinoless double beta ($0\nu\beta\beta$) decay provides a unique probe of the Majorana nature of neutrinos, i.e whether neutrinos are their own antiparticles. The observation of this process would imply the violation of lepton number conservation and signal new physics, beyond the Standard Model. However, the interpretation of $0\nu\beta\beta$ experimental searches relies critically on nuclear matrix element (NME) calculations, which are sensitive to nuclear structure inputs and remain a significant source of uncertainty. In this talk, I will discuss nuclear structure properties relevant to the ^{136}Xe $0\nu\beta\beta$ decay, investigated via the $^{137}\text{Ba}(d,^3\text{He})^{136}\text{Cs}$ single-nucleon transfer reaction. The results provide experimental constraints on single-proton occupancies and contribute to reducing uncertainties in NME calculations.

References

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Primary author: NZOBADILA ONDZE, Jespere Calderone (University of the Western Cape)

Presenter: NZOBADILA ONDZE, Jespere Calderone (University of the Western Cape)

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