

Search for neutrinoless double beta decay in ^{124}Sn

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The mass and nature of neutrinos play an important role in theories beyond the standard model. The nuclear β decay and double beta decay can provide the information on absolute effective mass of the neutrinos, which would represent a major advance in our understanding of particle physics. At present, neutrinoless double beta decay is perhaps the only experiment that can tell us whether the neutrino is a Dirac or a Majorana particle. Given the significance of the $0\nu\beta\beta$, there is a widespread interest for these rare event studies employing a variety of novel techniques. An essential criterion for detector design is the high energy resolution for a precision measurement of the sum energy of two electrons emitted in $0\nu\beta\beta$ decay. The low temperature bolometric detectors are ideally suited for this purpose.

In India, efforts have been initiated to search for $0\nu\beta\beta$ in ^{124}Sn ($Q_{\beta\beta}=2.28$ MeV, 5.8% abundance) at the upcoming underground facility of India based Neutrino Observatory (INO). A custom built cryogen free dilution refrigerator has been installed at TIFR, Mumbai for the development of Sn prototype bolometer. A base temperature of 10 mK has been achieved in this setup. This talk will briefly describe efforts towards Sn bolometer development.