

Neutrinoless Double-Beta Decay

Tuesday, September 6, 2011 11:50 AM (30 minutes)

Neutrinoless double-beta decay provides a strong probe of physics beyond the standard model. The observation of such a decay would establish that the neutrino and anti-neutrino are the same particle - a so-called Majorana particle - and would help determine the absolute mass scale of the neutrino. In addition, it could provide insight into understanding lepton-number-violating processes, helping to illuminate causes of the observed matter-anti-matter asymmetry in the universe. The rarity of such a decay (current limits on the order of 10^{22} - 10^{25} years for various isotopes) underscores the need for large amounts of source material and ultra-radiopure detector components to maximize the potential signal to background. This talk will outline how different collaborations are addressing these experimental difficulties and present the current state-of-art of the field, as defined by recent and expected experimental results.

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Session Classification: Precision Experiments II

Track Classification: Precision Experiments