



Contribution ID: 37

Type: **Oral**

## Non-standard mechanisms of neutrinoless double beta decay

Understanding the origin of lepton number violation is one of the major questions in physics today. Neutrinoless double beta decay provides a way in which this violation can be tested. Furthermore, neutrinoless double beta decay can significantly help to shed light on the issue of nonzero neutrino mass, as the observation of this lepton-number-violating process would imply that neutrinos are Majorana particles. However, the underlying interaction does not have to be as simple as the standard neutrino mass mechanism. Recently, we have derived the form of hadronic and leptonic matrix elements for all possible short-range and long-range mechanisms of neutrinoless double beta decay. With these, we have calculated the numerical values of the nuclear matrix elements (NME) and phase space factors (PSF) by making use of the microscopic interacting boson model (IBM-2) for NMEs and of exact Dirac wave functions for the PSFs. The derived angular correlations of the emitted electrons show that distinction between different models of non-standard mechanisms, as well as standard mass mechanism, could be experimentally observable.

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**Session Classification:** Contributed Talks