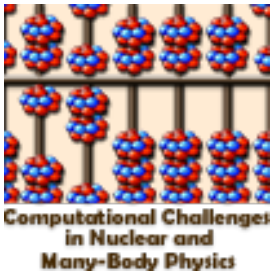

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Neutrino physics and nuclear structure for double-beta decay

Neutrinoless double-beta decay, if observed, would signal physics beyond the Standard Model that would be discovered at energies significantly lower than those at which the relevant degrees of freedom can be excited. Therefore, it could be difficult to use the neutrinoless double-beta decay observations to distinguish between several beyond Standard Model competing mechanisms that were propose to explain this process. Accurate nuclear structure calculations of the nuclear matrix elements (NME) necessary to analyze the decay rates could be helpful to narrow down the list of competing mechanisms, and to better identify the more exotic properties of the neutrinos. In my talk I will review the neutrino physics relevant for double-beta decay, I will analyze the status of the shell model calculation of the NME, and their relevance for discriminating the contribution of possible competing mechanisms to the neutrinoless double-beta decay process. U.S. DoE grant DE-SC0008529 and U.S. NSF grants PHY-1068217 and PHY-1404442 are acknowledged.