Contribution ID: **114** Type: **Parallel**

Current Status of Neutrinoless Double-Beta Decay Matrix Elements

Thursday, 31 May 2018 17:30 (20 minutes)

Observing neutrinoless double-beta ($0\nu\beta\beta$) decay is the most promising way to detect lepton number violation in the laboratory, and it would imply that neutrinos are their own antiparticles. The decay half-life naturally depends on a nuclear matrix element that needs to be calculated theoretically. A good knowledge of this matrix element is key for the planning of $0\nu\beta\beta$ decay experiments, and also to extract information on the neutrino mass once $0\nu\beta\beta$ decay is observed.

Currently predicted matrix-element values depend on the many-body method used to calculate them and, in addition, they may need to be "quenched", as the matrix elements of other beta decays that, however, have a very different momemtum-transfer regime. I will discuss recent efforts towards obtaining reliable nuclear matrix elements, ranging from improved calculations with phenomenological many-body approaches, to the first applications of "ab initio" many-body methods to $0\nu\beta\beta$ decay, finalizing with possible measurements that could be very useful to test calculations and to provide information on the value of the $0\nu\beta\beta$ matrix elements.

E-mail

menendez@cns.s.u-tokyo.ac.jp

Funding source

Japanese Society for the Promotion of Science through KAKENHI grant No. 18K0639

Primary author: MENENDEZ, Javier (Center for Nuclear Study, University of Tokyo)

Presenter: MENENDEZ, Javier (Center for Nuclear Study, University of Tokyo)

Session Classification: Nuclear Forces and Structure, NN Correlations, and Medium Effects

Track Classification: NFS