

The NUMEN project: a new way to provide data-driven information on neutrino-less double-beta decay

The search for neutrino-less double beta ($0\nu\beta\beta$) decay has attracted much interest in the last years due to the extraordinary consequences that could derive from its observation. In the view to provide experimental information on the nuclear matrix elements involved in the expression of $0\nu\beta\beta$ -decay half-life, the NUMEN project is measuring cross-sections of double charge exchange (DCE) and other quasi-elastic nuclear reactions. The experiments are performed in Catania, at the Laboratori Nazionali del Sud of the Istituto Nazionale di Fisica Nucleare, using the MAGNEX large acceptance magnetic spectrometer. A fully consistent and coherent study of several reaction channels, including the DCE one, both from the experimental and the theoretical side is the new method exploited by the project. The application of this multichannel approach to a case study will be presented during the conference. New data from the first experimental measurements of the absolute DCE cross-sections will be also presented for some of the $0\nu\beta\beta$ candidates.

Author: SPATAFORA, Alessandro (INFN-LNS)

Co-authors: Dr CARBONE, Diana (INFN-LNS); CAPPUZZELLO, Francesco; CAVALLARO, Manuela; NUMEN COLLABORATION

Presenter: SPATAFORA, Alessandro (INFN-LNS)

Session Classification: Research Talks of “Session 8”