Contribution ID: **31** Type: **not specified**

Nuclear structure calculations for neutrinoless double-beta decay: an overlook on present and future

Wednesday 1 October 2025 09:30 (30 minutes)

The detection of the double-beta decay without neutrino emission will represent a major turning point towards our knowledge of the neutrino nature. Moreover, it is going to open new scenarios for the Beyond-Standard-Model physics, because of the violation of the lepton number within such a process. In particular, the measurement of the half-life of such a decay will provide an almost direct evaluation of the neutrino effective mass, through the calculation of the nuclear matrix element of the decay process (M0nu) that connects the wave functions of the initial and final states.
In this presentation, I will overview the recent theoretical developments of the calculations of M0nu, and the future perspectives to obtain a precise and reliable evaluation of this quantity. In particular, I will focus on the results obtained by microscopic nuclear structure calculations, that have recent clarified the historical problem of the quenching of the axial coupling constant gA.

Author: Prof. CORAGGIO, Luigi (INFN-NA)

Presenter: Prof. CORAGGIO, Luigi (INFN-NA)

Session Classification: Long talks of IS (I)