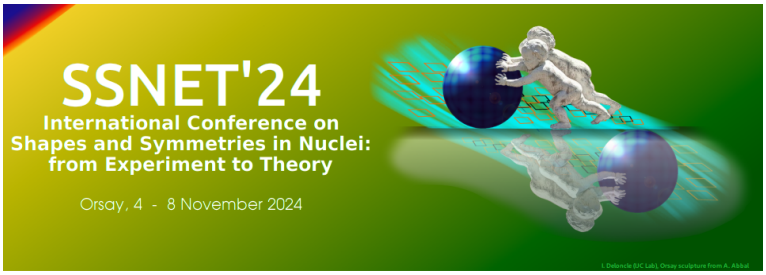

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Self-Consistent Green's function computations for nuclear response

Many-body Green's function theory stands out among ab initio methods because of its capability of computing a large set of observables, ranging from ground state properties, to response and single particle spectroscopy. The advantage is the capability of connetcting different aspects of the many-body correlations and dynamics of a given nucleus within the same microscopic framework.

In this talk I will report on the appication to the collective repsonse of nuclei along the Oxygen, Calcium and Nickel isotopic chains and on the possibility to account for beyond-RPA correlations [1,2], as well as the repsonse to electroweak probes [3]. A related development is the mapping of the Green's function formalism onto shell-model spaces and the corresponding effetive charges that allows investigating complex isotopes [4].

Based on ab initio Green's function simulations, I will further discuss the analysis of a recent GANIL experiment that uncovered the existence of a charge bubble in 46 Ar.

[1] C. Barbieri, W.H. Dickhoff, Physical Review C68, 143111 (2003)
[2] F. Raimondi, C. Barbieri, Physical Review C99, 054327 (2019)
[3] F. Raimondi, C. Barbieri, Physical Review C100, 024317 (2019)
[4] C. Barbieri, N. Rocco, V. Somà, Physical Review C100, 062501 (2019)

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