

The dipole response of exotic nuclei and the nuclear symmetry energy

Large efforts have been undertaken in the past years in order to develop the experimental tools for an investigation of giant resonances in unstable nuclei. Data are still scarce, but promising results have emerged, in particular concerning the dipole response of short-lived nuclei. The interest in studying the multipole response of exotic nuclei is on one hand the nuclear structure aspect concerned with the collective response of neutron-proton asymmetric nuclei, where a change is expected towards a softer response, including possibly new modes of excitation related to the excess nucleons and weak binding. On the other hand, the giant resonances, or the multipole response of heavy nuclei in general, can be related to nuclear matter properties. Measurements for neutron-proton asymmetric nuclei will be able to constrain parameters of the equation of state for asymmetric nuclear matter, as the giant monopole resonance energy for the incompressibility, and the dipole polarizability for the density dependence of the symmetry energy. I will discuss some recent experimental results and developments from the R3B experiment.

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