FULLY SELF-CONSISTENT STUDY OF ISOBARIC ANALOG RESONANCES

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The fully self-consistent framework for isobaric-analog resonances is presented. The nuclei around the neutron shells at $N = 20$, 50, 82, 126 including non-magic nuclei with pairing in both neutron and proton sectors are treated in. the Density Functional plus Continuum Quasiparticle Random Phase Approximation (DF + CQRPA). The recently established new Fayans functional DF3-f is applied for calculations of the IAR energies in long isotopic chains. A comparison with the relativistic QRPA [1, 2] and SAMi + RPA [3] shows better performance and flexibility of the DF + CQRPA. In particular, constraining the strength of exchange Coulomb contribution from the binding energy splitting of the doublets and triplets of the mirror nuclei allows for better description of the IAR energies [4]. In Fig.1 a comparison with the available experimental IAR energies for Ca, Sn and Pb isotopic chains is given.

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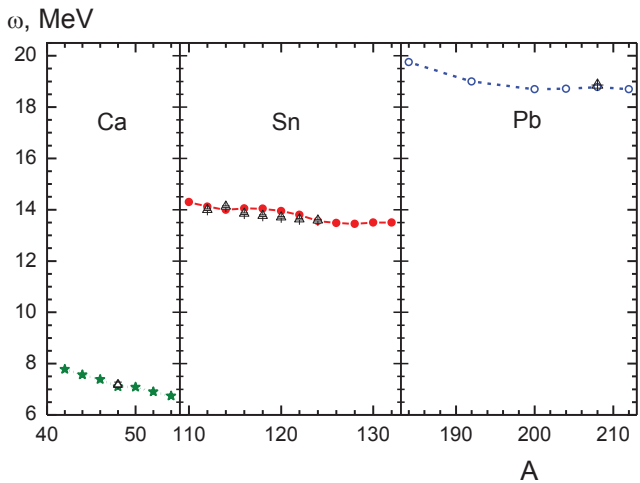

Fig. 1.The IAR energies (relative to the parent nucleus ground state) in the Ca, Sn and Pb isotopic chains in comparison with the data.

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