ID de la contribución : **8** Tipo : **no especificado**

Isospin symmetry at 100Sn

jueves, 27 de marzo de 2025 14:00 (15)

The N=Z=50 nucleus, 100Sn, is the heaviest self-conjugate and doubly magic nucleus that remains stable against particle emission, making it an exceptional candidate for shell-model studies aimed at deepening our understanding of the nuclear force.
Its structure is dominated by the strong proton-neutron interaction within the 0g9/2 orbital, leading to unique features such as spin gaps, seniority effects, parity-changing isomerism, and proton-neutron pairing correlations.
For the most neutron-deficient isotopes in this region—specifically those with Tz<0Tz very little is known about their excited states. The RIBF is currently the only facility where such studies are feasible, provided a highly efficient γ-ray spectrometer, such as the one proposed here, is employed. This region will therefore be the primary focus of the new decay campaign.
A particularly intriguing case is 98Sn, the mirror nucleus of 98Cd. These two nuclei likely form the heaviest bound mirror pair among all even-even nuclei, offering a unique opportunity to test isospin symmetry in nuclear interactions. Given their expected pure configurations differing by only two nucleon holes from 100Sn they provide an ideal laboratory for comparing proton-proton (pp) and neutron-neutron (nn) interactions with minimal configuration mixing.

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Clasificación de la sesión : Proton Rich Nuclei III