

The race for 100Sn – History of experimental and shell model approach

mardi 9 octobre 2012 11:40 (45 minutes)

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The nuclear structure of 100Sn and its neighbours as result of about 50 years of experimental and shell model research is reviewed. The ever increasing sophistication of experimental techniques has paved the way towards 100Sn and its next neighbours with the most recent highlight of observation of super-allowed Gamow - Teller decay [1]. The available experimental data provide stringent constraints for nuclear structure theory as summarised in a recent review [2]. The robustness of the Z, N=50 shells, their evolution to the neutron-rich neighbours 78Ni and 132Sn, the role of core excitations in the N=4 harmonic oscillator (HO) shell, the proton-neutron interaction at N~Z, and the g_{9/2n} seniority scheme will be discussed. The effective isovector g_{9/22} two-body interaction is analysed for 78 ≤ A ≤ 132 and a comparison of the N=3,4 HO shells with respect to E2 and GT strength is presented. The evolution of shell model calculations from empirical (ESM) to large scale (LSSM) has established present structure knowledge and boosted future experimental research in the region.

[1] C. Hinke et al., Nature 486, 341 (2012)

[2] T. Faestermann, M. Górska, H. Grawe, Progr. Part. Nucl. Phys., in print

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Classification de Session: structure of proton rich nuclei around 100sn

Classification de thématique: Proton rich nuclei in the vicinity of 100Sn