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Probing the doubly magic shell closure at 132Sn by Coulomb excitation of neutron-rich 130Sn

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First excited states of 130Sn, the even-even neighbour of the doubly-magic nucleus 132Sn, were populated via safe Coulomb excitation (CE) employing the recently commissioned, highly efficient MINIBALL array. The 130Sn ions were accelerated by the HIE-ISOLDE accelerator to an energy of 4.4 MeV/u and impinged onto a 206Pb target. The de-exciting rays from excited states of the target and projectile nuclei have been recorded in coincidence with scattered particles. Sufficient statistics was obtained to observe rays from the first 2+ and 4+ states. The ongoing data analysis aims for reduced transition strengths for the 0+g.s. → 2+1 and 2+1 → 4+1 transitions in 130Sn in order to understand the evolution of collectivity and nuclear structure around the magic shell closure at N=82, Z=50 tin isotopes. Advanced shell model calculations using realistic interactions predict enhanced collectivity in the neighbouring isotopes of 132Sn [1]. Moreover, a puzzling discrepancy between previous measurements in 130Sn and latest theoretical results [2] awaits to be resolved.
[1] D. Rosiak et al. Phys. Rev. Lett. 121, 252501 (2018)
[2] T. Togashi et al. Phys. Rev. Lett. 121, 062501 (2018)
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