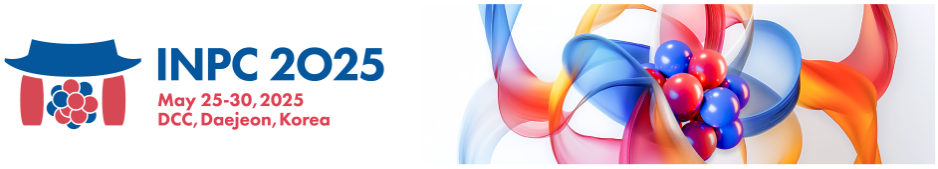

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Revealing the nature of yrast states in neutron-rich polonium isotopes

Friday, 30 May 2025 08:30 (25 minutes)

Polonium isotopes having two protons above the shell closure at $Z = 82$ demonstrate a wide variety of high-spin isomeric states across the whole chain.
The structure of neutron-deficient isotopes up to ^{210}Po ($N = 126$) is well established thanks to being easily produced through different methods, as opposed to their neutron-rich counterparts for which not much information is currently available and only selective techniques can be used for production.
The presentation will focus on first fast-timing measurements of yrast states up to 8^+ in ^{214,216,218}Po isotopes produced in the β-decay of ^{214,216,218}Bi at the ISOLDE Decay Station of ISOLDE-CERN. The only half-life value previously available in literature corresponding to the 8^+ state in ^{214}Po was 20 times larger than the presently reported one. The extracted transition probabilities $B(E2)$ values provide a crucial test of the different theoretical approaches describing the underlying configurations of the yrast band.
The new experimental results are described by shell-model calculations using the KHPE and H208 effective interactions and their pairing modified versions. These results contradict the previous expectations of isomerism for the 8^+ yrast states in neutron-rich polonium isotopes, showing an increase in configuration mixing as opposed to the simple seniority scheme applicable in the neutron-deficient cases.

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