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Fast-timing studies in ^{214,216,218}Po following the beta-minus decay of ^{214,216,218}Bi isotopes at the ISOLDE Decay Station

Po isotopes, having 2 valence protons in the $h_{9/2}$ orbital above the Z=82 Pb core, demonstrate a multitude of interesting phenomena, such as widespread shape coexistence and the presence of high spin isomers in the neutron-deficient region. The structure of the Po isotopes is ideally suited to test the applicability of the seniority scheme across the long isotopic chain, spanning many neutron sub-shells both above and below N=126.

While extensive studies of 8^+ isomers in neutron-deficient even-even Po isotopes were performed in the past, not much is known on them in the neutron-rich cases. Such isomers can arise from several configurations, e.g. $\pi(h_{9/2})^2$, $\nu(g_{9/2})^n$, an α cluster coupled to a ^{208}Pb core or even from a mixture of these configurations. The lifetime measurements for the aforementioned 8^+ states (also for the other states of the yrast band, such as 2^+, 4^+, 6^+) can provide important information on $B(E2)$ values, which can then be used to test the different theoretical approaches and underlying configurations.

We report on the IS650 experiment performed at the ISOLDE Decay Station in July 2018 where intense and high-purity laser-ionized ^{214,216,218}Bi beams were implanted on the IDS moving tape and, by employing the fast-timing technique, the lifetimes of nuclear levels Po daughter isotopes were studied. The experiment overview will be followed by a brief discussion of preliminary first-time lifetime measurements of the 8^+_1 states in ^{214,216,218}Po.

Primary authors: LICA, Razvan (IFIN-HH (RO)); ANDREYEV, Andrei (University of York (UK)); IS650 AND IDS COLLABORATION

Presenter: LICA, Razvan (IFIN-HH (RO))

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