Lifetime measurements in the south region of Pd using AGATA+NOSE+Plunger

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Nuclei in the vicinity of ^{208}Pb are a good testing ground for different models and in particular those differing from the doubly closed shell by a few particles such as ^{206}Hg or ^{204}Pt. This region has been explored in the past using fragmentation reactions [1,2], multi-nucleon transfer [3] allowing to measure lifetimes of isomeric states and perform spectroscopy of states below the isomers. On the contrary, experimental information for nuclei in the south of ^{208}Pb, especially on reduced transition probabilities is scarce.
The recently measured B(E2: $2^+ \rightarrow 0^+$) value in ^{206}Hg via Coulomb excitation, found to be lower than for other lighter Hg isotopes, opens up the prospect to study other nuclei in the region [4]. Moreover large scale shell model calculations performed for Pb nuclei are able to reproduce the excitation energies but fail to reproduce transition probabilities [5]. Information on the evolution of quadrupole collectivity with the neutron number, for nuclei on the south of 208Pd, would provide a great opportunity to study and address several questions regarding the nuclear structure in this region.

We aim to measure lifetimes in the southwest region of ^{208}Pd by employing a multi-nucleon transfer reaction, a beam of 208Pd with energy 7 MeV/u impinging on a Sn target. AGATA will be coupled to the NOSE [6] which is composed of a MWPPAC and a Bragg ionization chamber, providing information on the position, total energy and charge. NOSE has been successfully used in the past employing the ^{197}Au+^{130}Te reaction [7]. Heavy partners from the reaction will be sent in NOSE and be identified, providing the needed channel selectivity and doppler correction on an event-by-event basis.

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