



Contribution ID: 28

Type: not specified

Towards lifetime and g-factor measurements of short-lived states in the vicinity of ^{208}Pb

The present presentation reports on the status of the analysis of the E672 experiment that was performed in July 2015 at GANIL. The aim of the experiment was to measure lifetimes of excited states in the ^{208}Pb region, focusing mainly on the lifetime of the $2+$ states of $^{204-206}\text{Hg}$. The nuclei of interest were populated with multi-nucleon transfer reactions. The beam-like recoils were identified with the VAMOS++ [1] magnetic spectrometer while the gamma rays were detected in AGATA [2]. A Plunger device was used for the lifetime determination based on the RDDS technique.

In this experiment, we can rely only on the mass of the fragments detected by VAMOS in order to identify the reaction products.

The x-rays of the ejectile will be used to determine their proton number. Although at the present stage of the analysis it is not clear yet which part of the statistics we will be able to use to reconstruct the mass of the beam-like product, and in particular ^{206}Hg , the analysis showed promising possibility for the lifetime determination of the $19/2^-$ state of ^{207}Pb , located above the $13/2^+$ isomeric state. This $19/2^-$ state is expected to be a two-phonon octupole excitation build on top of a neutron-hole excitation of ^{207}Pb . The lifetime measurement of this should allow to confirm, or refute, such a hypothesis. The analysis and the preliminary results concerning this lifetime will be presented in this contribution.

[1] M. Rejmund et al., NIM A646 (2005) 184-191

[2] S. Akkoyun et al., NIM A668 (2012) 26-58

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