Contribution ID: **17** Type: **not specified**

Shape coexistence in the neutron-deficient Hg isotopes studied via lifetime measurements

Wednesday, 29 June 2016 17:40 (20 minutes)

Near-degenerate states characterised by different shapes, i.e. shape coexistence, appear in various mesoscopic quantum systems, such as atomic nuclei. The shape of atomic nuclei is due to the complex interplay of closed shells, sub shells and residual interaction between protons and neutrons. The neutron-deficient isotopes close to the Z = 82 shell closure exhibit an extensive manifestation of shape coexistence. In particular, in the even-even mercury isotopes around 184Hg (N = 104, midshell) besides the predominant oblate-deformed ground-state band, a second relatively low-lying mainly prolate-deformed band was observed. The observed states are constituted by a configuration mixing of the underlying structures. This mixing changes as a function of the neutron number and the transition strength between two nuclear levels is very sensitive to their wave functions, hence it can be used to further understand the shape coexistence and the degree of the mixing. In order to study the shape coexistence in 188Hg, which is at the edge of the shape coexistence region, the first direct lifetime measurement experiment with a plunger device and the GALILEO array was performed using a fusion-evaporation reaction. The preliminary results including the transition strengths of the low-lying excited states in 188Hg will be presented.

Summary

We report on the study the onset of the shape coexistence in the proton-rich mercury isotopes via lifetime measurements of 188Hg. The lifetime of the lowest-lying yrast and non-yrast states were studied via a fusion-evaporation reaction using a plunger device coupled to the GALILEO array. We report on primary results including the transition strengths of the low-lying excited states in 188Hg

Primary authors: SICILIANO, Marco (LNL); Mr JOHN, Philipp Rudolf (PD)

Co-authors: GOASDUFF, Alain (LNL); NAPOLI, Daniel Ricardo (LNL); MENGONI, Daniele (PD); BAZZACCO, Dino (PD); TESTOV, Dmitry (PD); RECCHIA, Francesco (PD); GALTAROSSA, Franco (LNL); JAWORSKI, Grzegorz (LNL); VALIENTE DOBON, Jose' Javier (LNL); MENEGAZZO, Roberto (PD)

Presenter: Mr JOHN, Philipp Rudolf (PD)

Session Classification: Nuclear Structure and Reaction II