

Lifetime measurements in the octupole bands of ^{220}Ra

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In the landscape of nuclear shapes, dominated by reflection-symmetric forms leading to either spherical or axially-deformed arrangements, the occurrence of asymmetric pear-like nuclei is present only in selected areas of the nuclear chart, named Islands of Octupole Deformation. A measurement of lifetimes of the first excited states of ^{220}Ra , being at the edge of the island of octupole deformation, would help assessing the pattern of such deformation at the limit of the region and to assess its quadrupole-octupole degree of freedom.

The lifetimes of the first excited states are expected to be of the tens of ps order, based on the systematics in the region. We propose to perform the measurement with an inverse kinematics reaction, using a ^{208}Pb beam on a ^{18}O target, using AGATA+PRISMA with a plunger target.

Primary authors: POLETTINI, Marta (Istituto Nazionale di Fisica Nucleare); BENZONI, Giovanna (Istituto Nazionale di Fisica Nucleare); MENGONI, Daniele (Istituto Nazionale di Fisica Nucleare); SMITH, John (University of the West of Scotland); GOASDUFF, Alain (Università di Padova - INFN Sezione di Padova)

Presenter: POLETTINI, Marta (Istituto Nazionale di Fisica Nucleare)

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