

High-spin yrast isomers in ^{204}Hg

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This work reports the observation of high-spin states in ^{204}Hg using time-correlated γ -ray spectroscopy to identify isomers populated in deep-inelastic collisions of a 1.4 GeV ^{208}Pb beam on a thick ^{238}U target. A high-spin isomer with $\tau > 1 \mu\text{s}$ has been found and the observed γ -ray decay has established the yrast states below it, including another isomer with $\tau = 33(3) \text{ ns}$.

Spin and parity assignments were based on conversion coefficients deduced from intensity balance and on the observed γ -decay patterns.

The experimental results are compared with shell model calculations that include four holes in the entire configuration space between ^{132}Sn and ^{208}Pb .

Observed agreement with the calculation gave the supplementary arguments to the spin-parity assignments and clarified configurations of experimental states.

The $\tau > 1 \mu\text{s}$ isomer is suggested to be the $\pi h_{9/2}^{-1} \nu i_{13/2}^{-1}$ states that results from the coupling to maximum spin available for the four valence holes. Few prompt transitions feeding the isomer were also observed.

Primary author: Dr WRZESINSKI, Jacek (IFJ PAN Krakow)

Co-authors: Prof. BYRNE, A.P. (ANU Canberra); Dr MACHIAVELLI, Augusto O. (LBNL Berkeley); Prof. FORMAL, Bogdan (IFJ PAN Krakow); Prof. DRACOULIS, George (ANU Canberra); Dr LANE, Gregory (ANU Canberra); Dr MAIER, K.H. (IFJ PAN Krakow); Dr VETTER, Kai (LBNL Berkeley); Dr CROMAZ, Mario (LBNL Berkeley); Dr REJMUND, Maurycy (GANIL Caen); Dr CARPENTER, Michael P. (ANL Argonne); Prof. BRODA, Rafal (IFJ PAN Krakow); Dr JANSSENS, Robert V.F. (ANL Argonne); Dr CLARK, Roderick M. (LBNL Berkeley)

Presenter: Dr WRZESINSKI, Jacek (IFJ PAN Krakow)

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