

Frontiers in Gamma Ray Spectroscopy

FIG18



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Low- and medium- spin level structures in neutron-rich ^{96}Sr and ^{98}Zr nuclei

Content :

Nuclei in the vicinity of highly deformed as well as near-spherical region are expected to exhibit multi-faceted excitation modes in their level structures. ^{96}Sr and its $N=58$ isotone, ^{98}Zr , are positioned at one such interesting point in the nuclide chart. It was also predicted earlier that the 0^+ states in these nuclei are associated with different types of deformations. As these neutron-rich nuclei are difficult to populate through conventional fusion evaporation reaction, the previous investigations on these nuclei were mostly carried out using the spontaneous fission (SF) data from ^{252}Cf and ^{248}Cm radioactive sources. The present study attempts an investigation of nuclear structure phenomena associated with ^{96}Sr and ^{98}Zr nuclei, in the low- and medium- spin regimes, incorporating the new spectroscopic results obtained from the experiment employing thermal neutron induced fission of ^{235}U . The experiment was performed at the PF1B line of the high-flux reactor facility at the Institut Laue-Langevin (ILL), Grenoble, France. The γ -rays from the fission fragments were detected by an array consisting of eight EXOGAM large clovers, six large coaxial detectors from GASP and two unsuppressed clovers from the ILL. Evidence of shape-coexistence phenomenon with all its complexities and consequences, and the possible onset of other exotic modes of excitations in these nuclei will be presented.

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