

Isomeric Structure in ^{100}Sn Region: Possible Competition between β^+ Decay and Proton Emission in Isomeric Unbound Nucleus ^{97}Sn

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The isomeric structure and properties in proton-rich nuclides are crucial for determining the path of the rapid proton capture (rp)-process. For example, bound nuclei inside the dripline can have unbound isomeric states and change the rp -process pathway. The configuration interaction shell model (CISM) is used to investigate nuclei around the $Z = N$ line at the south-west region of ^{100}Sn . The excitation mechanism of $1/2_1^-$ isomers is identified as dominated by exciting one nucleon in the $1p_{1/2}$ orbit to the $0g_{9/2}$ orbit. The study explores the decay properties of both the ground and isomeric states. Remarkably, competitive β^+ decay and proton emission are predicted in the unbound $1/2_1^-$ isomer of ^{97}Sn , suggesting potential influences on the rp -process pathway.