

Fine Structure in Deformed Proton Emitters

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Abstract

In a recent experiment to study the proton radioactivity of the highly deformed ¹³¹Eu nucleus, two proton lines were detected. The higher energy one was assigned to the ground-state to ground-state decay, while the lower energy, to the ground-state to the 2⁺ state decay. This constitutes the first observation of fine structure in proton radioactivity. With these four measured quantities, proton energies, half-life and branching ratio, it is possible to determine the Nilsson configuration of the ground state of the proton emitting nucleus as well as the 2⁺ energy and nuclear deformation of the daughter nucleus. These results will be presented and discussed.

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