

THE STUDY OF DEFORMATION SHAPES IN ${}_{20}\text{Ca}$ ($40 \leq A \leq 48$) NUCLIDES BY USING TRANSITION STRENGTHS $[M(E2)]^2_{w.u}$

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Abstract

The values of the transition strengths $[M(E2)]^2_{w.u.}$ to gamma transitions from first excited states 2_1^+ to ground states 0_1^+ and that produced from pure electric quadruple emissions plotted as function for neutron number (N) in ${}_{20}\text{Ca}$ ($40 \leq A \leq 48$) nuclei, the obtained shape is showing regular behavior for $[M(E2)]^2_{w.u.}$ via the neutron number (N). Irregular deviation in $[M(E2)]^2_{w.u.}$ values for the neutron numbers N= 20 and 28 had been noticed, which indicates the transition strength for gamma transitions is reduced to minimum versus high excitation energy in doubly magic nuclei and that is will affected the nuclide structure.

Key words : Transition strength $[M(E2)]^2_{w.u.}$