

AN INTELLIGENT APPROACH FOR BACKBENDING

MODELING OF ODD MASS NUCLEI

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ABSTRACT

In the present work, we have developed an intelligent mathematical model based on support vector machine (SVM) for the investigation of the high spin band states for some odd mass nuclei ($^{171}_{75}\text{Re}$, $^{163}_{72}\text{Hf}$, $^{161}_{72}\text{Hf}$, $^{165}_{72}\text{Hf}$, and $^{181}_{75}\text{Re}$) which exhibit anomalies behavior in the moment of inertia. The comparison between our results and the corresponding experimental ones manifests the same trend for the energy levels and backbending phenomenon and this supports that our model could be applied successfully in the investigation, analysis and estimation of backbending for odd mass nuclei.

KEYWORDS: Anomalies Behavior, Energy Levels, Estimation of Backbending

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