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The distribution of the rotational transition strength in warm nuclei studied through γ-ray correlations

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Abstract

The study of damping of rotational motion applying the rotational plane mapping (RPM) method is presented and discussed. The aim of this technique is to extract the distribution of the rotational transition strength from an analysis of the shape of the "central valley" of two- and three-dimensional γ-ray spectra. The method is applied to a triple γ-coincidence data set of ^{162,163}Tm nuclei formed in ^{37}Cl+^{130}Te reactions. The rotational transition strength is obtained as a function of rotational frequency for selected regions of entry states, and the width is found to be rather constant and approximately equal to 80 keV. This value is significantly smaller than the value predicted theoretically for the rotational damping width $\Gamma_{\rm rot}$. Also the ratio between the observed depth and width of both the 2D and 3D valleys does not agree with the simple model

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