Int. Workshop “Shapes and Dynamics of Atomic Nuclei: Contemporary Aspects”
ed. Nikolay Minkov, Heron Press, Sofia 2021

# K-forbidden E2 transitions and the role of configuration mixing

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## Abstract

The year 2021 marks 100 years since the discovery of nuclear isomerism in $^{234}$Pa [1], which itself represents the first example showing that the nucleus itself has internal structure. In deformed nuclei, it is now well known that the projection, K, of the angular momentum on the nuclear symmetry axis plays a key role in the formation of isomeric states [2]. When the lowest-energy member of a rotational band can only decay internally by a large change in K, a half-life greater than a few nanoseconds may be expected. However, transition hindrance factors vary over several orders of magnitude, even for a given K change. In the present work, K-forbidden E2 transition rates are examined, and comparison is made with an alternative variable, that is the effective mixing strength between the K isomer and the state of equal total angular momentum in the band to which the isomer decays. When applied to $\Delta$K = 6, E2 decays from three-quasiparticle isomers, a configuration dependence becomes apparent that supports the role of Coriolis K-mixing [3]. The data for other quasiparticle numbers will also be discussed.

## References

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