Why Nilsson Quantum Numbers Remain Good at Moderate Deformations?

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The Nilsson model is a simple microscopic model which has been extensively used over the years for the interpretation of a bulk of experimental results. The single particle orbitals in this model are labeled by quantum numbers which are good in the limit of large nuclear deformations. However, it is generally admitted that these quantum numbers remain good even at moderate deformations. We show that this fact is due to the existence of an underlying approximate symmetry, called the proxy-SU(3) symmetry [1–3]. The implications of proxy-SU(3) on various aspects of nuclear structure will be discussed.

References

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