JACOBI AND POINCARÉ SHAPE TRANSITIONS IN ROTATING NUCLEI

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Using our recently developed Fourier-type nuclear shape parametrization [1], the effect of high-spin rotation is investigated. The calculations are performed in a 4-dimensional deformation-parameter space taking into account elongation, nonaxiality, neck formation and pear-like shapes, while the Lublin-Strasbourg-Drop model [2] is used for the macroscopic part of the nuclear energy. The critical angular momentum values for Jacobi [3,4] and Poincare transitions [5,6] or for the fission instability are obtained by an analysis of the potential energy surfaces of nuclei from different mass regions.The effect of higher order multipolarity deformations ($\lambda=5$ and $\lambda=6$) on the corresponding saddle-point energies is also investigated.

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