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Alternative prolate to oblate QPT scheme in odd systems, preliminary results

I will illustrate an exactly solvable algebraic Hamiltonian for odd systems, that spans the prolate-to-oblate region. The underlying $SU^{BF}(3) \otimes U_s^F(2)$ dynamical symmetry, allows to maintain the axial symmetry throughout, thanks to the mixing of quadratic and cubic Casimir operators of $SU^{BF}(3)$. A fermionic basis with j = {1/2, 3/2, 5/2} is coupled to the boson part and diagonalized finding a rich variety of behaviours: the various orbitals do not display the same shape, some are prolate while others are oblate, and they make the transition following different paths.

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