Spins of Excited Superdeformed Bands in Tl Using Soft Rotor Formula

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The two-parameter model viz. soft-rotor formula (SRF) defined for even-even nuclei is used to assign the band-head spin of the 17 rotational bands in Tl isotopes of the $A \sim 190$ mass region. The SRF, defined for well-deformed and transitional nuclei, is based on the concept that the moment of inertia increases with increasing spin (I) due to centrifugal stretching and Coriolis antipairing effect. The least-squares fitting method is employed to obtain the spins of these bands in the $A \sim 190$ mass region. The calculated transition energies are found to depend sensitively on the proposed spin. Whenever a correct spin assignment is made, the calculated and experimental transition energies coincide very well. The dynamic moment of inertia is also calculated and its variation with rotational frequency is explored.