Band Head Spin Prediction of Super Deformed Rotational Bands in A~80 Mass Region

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Abstract—*Bohr and Mottelson 4-parameter formula, two parameter* (ab) *formula and Variable Moment of Inertia (VMI) has been applied to four superdeformed rotational bands (SDRB's) of* ^{86}Zr *to obtain bandhead spin* (I_0). *The band head spins of these four bands in A~80 mass region is predicted by Least squares fitting method. Intraband* $\gamma -$*rays energies are fitted in these models to extract models parameter so as to obtain a minimum root mean square (rms) deviation between calculated and the observed transition energies. The calculated transition energies depend upon the prescribed spins. When a legitimate bandhead spin is assigned the calculated transition energy agree well with the observed transition energy. The results obtained from two parameter (ab) formula agree well with the experimental data.*