**Oblate deformation and metastable states in Pt and Hg isotopes**

S.K. Tandel
UM-DAE Centre for Excellence in Basic Sciences, Mumbai 400098, India

The structure of several Pt and Hg isotopes along the line of stability, just below doubly-magic $^{208}$Pb, has revealed a number of interesting phenomena. Proton-rich Pt isotopes exhibit a transition from prolate to oblate shapes at high spin. With increasing neutron number, a progression towards oblate shapes near the ground states of Pt and Hg isotopes is observed. Further, metastable states provide insight into the role of high-$j$ nucleons in the evolution of collectivity with isospin and angular momentum.

The experiments were performed at Argonne National Laboratory, and new information on excited states in $^{192-198}$Pt and $^{198-202}$Hg beyond 20 $\hbar$ has been obtained by populating nuclei of interest through multi-nucleon transfer reactions and the detection of $\gamma$ rays using the Gammasphere array. New metastable states are identified in $^{195,196,198}$Pt and $^{200,202}$Hg. Multiple nucleon alignments are established in the yrast, positive-parity sequences of even-$A$ Pt isotopes, which when combined with new results on odd-$A$ Pt isotopes serve to establish the precise nature of observed band crossings. An abrupt drop in collectivity at high spin beyond $N$=120 is evident from reduced $E2$ transition probabilities for the decay of the $12^+$ metastable states, in contrast to a gradual decrease near the ground states. The high-spin level structure of $^{198,202}$Hg has been considerably extended, and a contrast in angular momentum generation mechanisms is visible between these nuclei. Detailed calculations within the framework of the Ultimate Cranker code and tilted axis cranking covariant density functional theory provide a satisfactory account of the observed phenomena.