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Search for Charality in 193Tl

Research conducted at iThemba LABS showed that chiral symmetry can develop in the thallium isotopes in the 190 mass region. In order to increase the knowledge about chirality in this mass region, a ɣ-spectroscopy study of 193Tl was performed at iThemba LABS. The previous level scheme of 193Tl was modified and extended. Spin and parity were assigned to most of the levels. Three negative parity bands showing similar properties were identified. These bands were associated with the same configuration which is suitable for chiral symmetry. The observed near-degeneracy is good and indicates the presence of chiral symmetry. Furthermore, two bands that could form a chiral pair were observed at higher spins. The results from theoretical calculations using the Cranked Nilsson-Strutinsky (CNS) codes and the multi-particle-plus-triaxial rotor (MPR) model of Carlsson and Ragnarsson are in agreement with the proposed observation of chiral symmetry. Possible multiplet of chiral systems will be discussed.

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