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Chilarity in ^{193}Tl

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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 γ -spectroscopy study of ^{193}Tl was performed at iThemba LABS. The previous level scheme of ^{193}Tl 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.

Summary

A study to search for chirality in ^{193}Tl was conducted at iThemba LABS. Similarity of properties that was observed in a number of bands suggests that multiple chiral systems could be present in ^{193}Tl . Theoretical calculations that were performed are in good agreement with the presence of chiral symmetry in ^{193}Tl .

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

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