

SAIP2014



Contribution ID : 317

Search for chirality in ^{193}Tl

Thursday 10 Jul 2014 at 11:10 (00h20')

Abstract :

Based on the theoretical description of chiral symmetry in nuclear system by Fauendorf and Meng, some chiral doublet bands were suggested in different mass regions. It was revealed at iThemba LABS that Tl isotopes form a new region where chirality could develop. In particular ^{194}Tl was found to be perhaps the best chiral candidate up to date. ^{193}Tl as a neighbour of ^{194}Tl is thus likely to be a very good chiral candidate. In order to search for possible chiral doublet bands in ^{193}Tl , an experiment was performed using the $^{160}\text{Gd}(^{37}\text{Cl},4n)$ reaction. The analysis showed that two aside bands could be chiral partners to Band 2. However, statistics were not enough to determine the linking transitions and their spin and parity assignments. Thus, another experiment was performed using the reaction of $^{181}\text{Ta}(^{18}\text{O},6n)$ which has much larger cross-section for production of ^{193}Tl . The faster digital electronics was also employed. Alternatively: The new data set has much larger statistics. Analysis for these new data is in progress. The results obtained so far will be presented.

Award :

Yes

Level :

PhD

Supervisor :

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Paper :

Yes

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Session classification : NPRP

Track classification : Track B - Nuclear, Particle and Radiation Physics

Type : Oral Presentation