

# Search for parity and time reversal symmetry violation using neutron absorption reaction by nuclei (#2)

*Thursday, 14 March 2024 12:40 (10 minutes)*

“The fundamental parity violation caused by the hadronic weak interaction is enhanced by up to  $10^6$  times in neutron absorption reactions of  $^{139}\text{La}$ ,  $^{131}\text{Xe}$ ,  $^{117}\text{Sn}$ , and other nuclei. This enhancement can be explained by the mixing between s-wave and p-wave amplitudes of the compound nuclear state (s-p mixing model). Similarly, T-violation can also be enhanced in these systems through the same mechanism, suggesting the possibility of conducting a sensitive search for T-violation using compound nucleus reactions. The NOPTREX collaboration is planning an experiment to explore unknown T-violation by measuring the T-odd cross-section between a polarized neutron beam and a polarized target. Recently, fundamental studies for the T-violation search experiment have been conducted, including the measurement of the angular correlation of (n, $\gamma$ ) reactions, enhanced P-violation, and the spin-dependent cross-section between polarized neutrons and a polarized target. In our presentation, we will provide an overview of these experiments and present several new results.”

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