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## Current Status for the search of time-reversal symmetry violation using compound nuclear reactions

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The large enhancement of parity-violation of the weak interaction was found in nuclear reactions for several nuclei [1]. The enhancement is explained as the mixing of parity-unfavored partial amplitudes in the entrance channel of the compound states, s-p mixing [2]. It is proposed that the time-reversal symmetry violation is also enhanced in compound nuclei by the same mechanism [3]. We are preparing the time-reversal violation search based on this new approach.

The time-reversal violation can be obtained by measuring the neutron spin behavior in compound nuclei using polarized neutron beam and polarized nuclear target. In parallel with the development of these instruments, we conduct precise measurements of compound nuclear reactions in J-PARC MLF. The enhancement factor of time-reversal violation can be estimated by measuring the angular correlation terms of  $(n,\gamma)$  reactions according to the s-p mixing theory. We have measured the several correlation terms for several nuclei, such as  $^{139}\text{La}$ ,  $^{117}\text{Sn}$ , and  $^{131}\text{Xe}$ , which are candidates of the target nuclei in the time-reversal violation search. Furthermore, we have already started the experiments with the polarized neutron beam and the polarized target. In this presentation, we will introduce the current status of the preparation for the search of time-reversal violation.

[1] G. E. Mitchell et al., Phys. Rep. 354, 157 (2001).

[2] V. P. Gudkov, Phys. Rep. 212, 77 (1992).

[3] V. V. Flambaum and O. P. Sushkov, Nucl. Phys. A 435, 352 (1985).

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