

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Angular Distribution of Prompt Gamma-rays for the Study of the Breaking of Discrete Symmetries in Compound Neutron Resonance KATSUYA HIROTA, Nagoya University, HIDEO HARADA, JAEA, TAKASHI INO, KEK, ATSUSHI KIMURA, JAEA, MASAOKI KITAGUCHI, Nagoya University, KENJI SAKAI, J-PARC, HIROHIKO SHIMIZU, Nagoya University — The weak interaction contained in the nuclear interaction can be observed as the P-violating asymmetry of the neutron capture cross section. The discovery of large enhancement of the P-violating asymmetry in p-wave compound resonances led to a systematic survey in 1990's. The largest enhancement is almost 10^6 compared with the nucleon-nucleon P-violating effect and the enhancement is explained as the interference between incident s- and p-wave amplitude. The mechanism of the P-violation has been proposed theoretically to be applicable to enhance the experimental sensitivity to breaking of the symmetry under the time-reversal operation. The enhancement of T-violation is given as $\Delta\sigma_{cp} = \kappa(j) (\omega/v) \Delta\sigma_p$ where $\Delta\sigma_{cp}$ and $\Delta\sigma_p$ are the CP- and P-violation cross section, v and ω are the weak and CP-violating interaction matrix elements between compound resonances with opposite parities, and $\kappa(j)$ is the ratio of the spin dependent factor of CP- and P-violation. The determination of $\kappa(j)$ is necessary to estimate the experimental sensitivity to T-violation. Therefore we measured the gamma ray angular distribution of radiative decay from compound resonances and evaluated the $\kappa(j)$.

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Date submitted: 01 Jul 2014

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