

638th ASRC Seminar

Date: Friday, May 20, 10:30 ~ 12:00

Location: : Room 302, ASRC bldg.

Speaker: Dr. Yoshitaka FUJITA
(Osaka University)

Title: Gamow-Teller Transitions for the Nuclear
Structure Study

•Abstract: Gamow-Teller (GT) transitions are caused by a simple $\sigma\tau$ (spin-isospin) operator. Note that spin and isospin are unique quantum numbers in atomic nuclei. The GT transitions are allowed among the orbits with the same j or the spin-orbit partners ($j_>$ and $j_<$). Therefore, in a simple shell-model (SM) picture, the GT strength is expected in a low-energy region and the region about 3-5 MeV higher. However, the GT strength distributions in individual nuclei can be largely dependent on the specific structure of each nucleus.

The most famous structure formed by Gamow-Teller (GT) excitations is the GT resonance (GTR) situated in the high E_x regions of 8-15 MeV. GTRs were found by pioneering (p,n) reactions in 1980s and consume about half of the Ikeda sum rule values. Recently, however, we found that GT strength can also be concentrated in a lowest-energy GT state with $E_x < 1$ MeV. We call the state as the “Low-energy Super GT state (LeSGT state)”. They also consume about half of the Ikeda sum rule values.

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