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## Collectivity along Ti isotopes towards N=40

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We have performed a Coulomb excitation experiment of  $^{58}\text{Ti}$  and determined its  $B(E2)$  value to study the evolution of collectivity in the Ti isotopes towards  $N = 40$ .

The neutron number  $N = 40$  is a magic number in the harmonic oscillator model.

However, the magic character is not observed in most nuclei because of the narrowing of the shell gap due to spin-orbit interaction.

One exception is the proton magic nickel isotope with  $N = 40$  ( $^{68}\text{Ni}$ ), which shows magic nature having small collectivity compared to the surrounding Ni isotopes.

$\text{Fe}(Z = 26)$  and  $\text{Cr}(Z = 24)$  at  $N = 40$  recover large collectivity again.

It is interesting to see if the magic nature restores again or not in Ti isotopes ( $Z = 22$ ) located near the lower edge ( $Z = 20$ ) of the  $f_{7/2}$  shell. For the Ti isotopes,  $B(E2)$  values, which are the most direct indicators of collectivity, have been obtained up to  $^{54}\text{Ti}$  with  $N = 32$ . The Coulomb excitation experiment was performed at RIBF using the HiCARI array consisting of the MiniBall clusters, Clover detectors, and Tracking Ge detectors. In this presentation, I will talk about the result of this experiment.

### Type of contribution

### Are you a student or postdoc?

yes

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