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Collectivity along Ti isotopes towards N=40

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We have performed a Coulomb excitation experiment of ^{58}Ti and
determined its $B(\text{E2})$ 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}Ni),
which shows magic nature having small collectivity compared to
the surrounding Ni isotopes.
Fe($Z = 26$) and 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, $B(\text{E2})$ values,
which are the most direct indicators of collectivity, have been
obtained up to ^{54}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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