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Hindered proton collectivity in the proton-rich nucleus 28S

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The reduced transition probability B(E2) of the 0+ ⟶ 2+ transition in 28S was determined experimentally using the Coulomb excitation at 53 MeV/nucleon. The experiment was performed using the RI Beam Factory at RIKEN Nishina Center. The resultant B(E2) value is smaller than the expectation based on an empirical B(E2) systematics. The relative importance of the proton- and neutron- collectivities in the transition is evaluated using the ratio of the neutron/proton transition matrix elements (Mn/Mp) obtained from the present B(E2) value for 28S and the known one for the mirror nucleus 28Mg. The obtained Mn/Mp ratio is much larger than N/Z ratio of 28S, indicating the neutron dominance in the transition and the hindered proton collectivity relative to that of neutrons. These result could be the emergence of Z=16 magicity in the |Tz|=2 nucleus 28S.

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