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Measurement of the Gamow-Teller strength distributions via the $(t, {}^3\text{He}\gamma)$ reactions on ${}^{45}\text{Sc}$ and ${}^{46}\text{Ti}$ ¹ SHUMPEI NOJI, National Superconducting Cyclotron Laboratory, Michigan State University, NSCL E12007 COLLABORATION — Electron captures (EC) of *pf*-shell nuclei play an important role in pre-supernova stellar evolution and crustal heating of neutron stars. Astrophysical models show clear sensitivity to the details of the Gamow-Teller (GT) strength distributions, which have been extensively studied by means of charge-exchange reactions. In the present work, we measured the GT strength distributions in some of the lightest *pf*-shell nuclei, ${}^{45}\text{Ca}$ and ${}^{46}\text{Sc}$, via the $(t, {}^3\text{He}\gamma)$ reaction on stable ${}^{45}\text{Sc}$ and ${}^{46}\text{Ti}$ stationary targets at $E_t = 115$ MeV/nucleon using the GRETINA array and the S800 spectrometer at the NSCL. Coincidence measurement with deexcitation γ rays from the residual nuclei allowed us to study the detailed structure of low-lying GT strength, which is of particular importance for astrophysical applications. In this presentation, we will report preliminary results of the experiment and compare them to theoretical calculations.

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