

Measurement of $^{69,71}\text{Ga}(n,\gamma)$ at astrophysical energies using the neutron time of flight facility n_TOF at CERN

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The origin of most elements heavier than iron in stellar nucleosynthesis can be explained by slow and rapid neutron capture reactions. In order to reproduce the observed isotopic abundances in nucleosynthesis simulations, an exact knowledge of the involved reaction rates at astrophysical energies is necessary. The stable isotopes ^{69}Ga and ^{71}Ga play an important role in the weak s-process, but experimental data for the corresponding neutron capture reactions are scarce.

We measured the neutron capture cross-section of isotopically enriched ^{69}Ga and ^{71}Ga samples at the n_TOF experiment's EAR1 beamline at CERN, Geneva. The time of flight technique with a flight path of about 200 m enabled us to cover a neutron energy range from eV to several hundred keV with a very good resolution.