

# Determination of the $^8\text{Li}$ neutron capture via the inverse reaction

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The cross sections of neutron capture on short half live nuclei are important for the r-process nucleosynthesis at several astrophysical environment. The experimental determination of these type of reaction needs indirect methods. One of these methods – the Coulomb dissociation – was checked in a case when the direct reaction has been already well explored experimentally.

The  $^7\text{Li}(n,\gamma)^8\text{Li}$  neutron capture cross section was determined and compared with the direct measurements and theories via the Coulomb dissociation of  $^8\text{Li}(\gamma,n)^7\text{Li}$ . A 69.5 MeV/nucleon  $^8\text{Li}$  beam was incident on a Pb target, and the outgoing neutron and  $^7\text{Li}$  nuclei were measured in coincidence. The deduced  $(n,\gamma)$  excitation function is consistent with data for the direct capture reaction  $^7\text{Li}(n,\gamma)^8\text{Li}$  and results from low-energy effective field theory calculations.