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## Measurement of the 154Gd neutron capture cross-section at n\_TOF (CERN), and its astrophysical implications

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Among the products of stellar nucleosynthesis heavier than Fe, 154Gd together with 152Gd have the peculiarity to be mainly produced by the slow capture process (the so-called s-process). Only a minor contribution may be produced in other processes. Their almost pure s-process origin makes them crucial for testing various models of the galactic chemical evolution (GCE). According to recent models, solar 154Gd and 152Gd abundances are expected to be 15-20% lower than the abundance of the s-only isotope 150Sm, which is discrepant to observations.

The close correlation between stellar abundances and neutron capture cross sections calls for an accurate measurement of 154Gd cross-section to reduce the uncertainty attributable to nuclear physics input and eventually rule out one of the possible causes of present discrepancies between observation and model predictions. To this end, the neutron capture cross section of 154Gd was measured in a wide energy range and with high resolution in the first experimental area of the neutron time-of-flight facility n\_TOF at CERN.

In this talk, after a brief description of the motivation and of the experimental setup used in the measurement, the preliminary results of the 154Gd neutron capture reaction will be presented, together with their astrophysical implications.

## Selected session

Nuclear Astrophysics

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