

The Nuclear Astrophysics program at n_TOF: past, present and future

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Neutron data are of fundamental importance in nuclear astrophysics for understanding the origin of chemical elements heavier than Fe, where and how these nuclei have been synthesized.

The CERN n_TOF facility offers a neutron flux that spans a wide energy spectrum, from thermal to GeV energies, enabling measurements covering at the same time the whole spectra of nuclear astrophysics interest.

The n_TOF performances related to the high energy resolution and to the high instantaneous neutron flux are decisive to extract accurate neutron-induced reaction cross-sections. These nuclear data inputs are fundamental to properly assessing the validity of the different stellar and nucleosynthesis models.

A wide number of isotopes have been investigated at n_TOF covering several aspects, as e.g. bottlenecks along the nucleosynthesis path induced by neutron magic nuclei, branching points, neutron sources and poison in the stars.

An overview of the relevant results and perspectives will be presented in the contribution.