

## High accuracy measurements of neutron induced cross sections on short-lived nuclei at the CERN n\_TOF facility

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The n\_TOF facility houses CERN's pulsed neutron source, comprising two beam lines of different flight paths (at  $\approx 185$  and  $\approx 19$  m) and one activation station. It is driven by the 20 GeV proton beam delivered by the Proto-Synchrotron accelerator impinging on a lead spallation target.

The energy resolution and the high instantaneous neutron flux are key factors to increase the signal-to-background ratio, crucial aspect when measuring radioactive isotopes.

Isotopes with half-lives higher than hundreds of days available in a sufficient amount of mass can be measured using the time-of-flight technique, while the activation technique can be applied in more challenging physics cases.

Over the last 25 years of operation of the n\_TOF facility a collaboration with several laboratories (CERN-Isolde, Ill, JRC-Geel, Los Alamos, PSI) able to isolate desired isotopes has been fruitfully established.

Measurements of neutron induced reactions on short-lived isotopes are of interest of nuclear astrophysics (i- and primordial nucleosynthesis) and highly required for applications to emerging nuclear technology.

A review of past measurements (e.g on sample of  $^7\text{Be}$ ,  $^{63}\text{Ni}$ ,  $^{78}\text{Se}$ ,  $^{171}\text{Tm}$ ,  $^{204}\text{Tl}$ ) and the prospects of an upgraded facility will be presented.

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