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Nuclear Astrophysics at n_TOF / CERN

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Neutron induced reactions play a key role in stellar nucleosynthesis processes. In particular, neutron reaction cross sections are an important input to predict abundances produced by the slow neutron capture process, responsible for about half of the elemental abundances heavier than iron. Also for some lighter mass isotopes, neutron induced reactions may play a crucial role, for example for the abundance of the cosmic gamma ray emitter ^{26}Al , which is destroyed by $^{26}\text{Al}(n,p)$ and $^{26}\text{Al}(n,\alpha)$ reactions.

Since its inception in 2001, several dozen measurements of neutron induced cross sections have been performed at the neutron time-of-flight facility (n_TOF) at CERN. In this seminar, I will present the facility, methodologies, and recent highlights of neutron induced cross section measurements of interest to astrophysics. I will also discuss future opportunities and plans.

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