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Neutron capture and total cross-section measurements on ^{94,95,96}Mo at n_TOF and GELINA

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Cross-sections for neutron-induced reactions with molybdenum is relevant in various scientific fields ranging from nuclear astrophysics to nuclear technologies. In addition to its astrophysical role, molybdenum isotopes can be found in fission power plants as fission products and the use of this material is under study for future improved reactors. Molybdenum is found in pre-solar silicon carbide grains and an accurate knowledge of its neutron capture cross section plays a crucial role in constraining stellar nucleosynthesis models, particularly for AGB stars. A deviation in the model predictions of isotopic composition in SiC grains has been observed when using Mo cross-section data from the two main KADoNiS versions.

Nevertheless, experimental data for the neutron capture cross-section found in the literature for Mo isotopes suffer from large uncertainties. This is also reflected in the large uncertainties of the cross-sections recommended in the ENDF/B-VIII.0 library and in the uncertainty of the MACS found in the KADoNiS database, which is of the order of 10% at 30 keV.

In this contribution the first preliminary results of transmission and radiative neutron capture measurements performed at n_TOF (CERN, Switzerland) and GELINA (EC-JRC Geel, Belgium) for 94,95,96 Mo will be presented.

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