



Contribution ID: 269

Type: Oral

On the need of new measurements to understand neutron capture nucleosynthesis

Friday, 1 December 2023 15:20 (15 minutes)

Neutron capture nucleosynthesis via s-, r- and i-process are responsible for the production of elements heavier than Fe in the Universe.

Nucleosynthesis predictions can be affected by both the free parameters of the astrophysical models, which do not allow to accurately reproduce the neutron densities in stellar environments, and the uncertainties of the nuclear physics quantities employed in calculations. The isotopic composition of stellar dust (SiC presolar grains in particular) provides strong constraints to nucleosynthesis models and hints to the need for new measurements of weak interaction (beta decays and electron captures) rates in ionized plasmas as well as of neutron-capture cross sections of unstable nuclei and/or isomers. We will focus our discussion in the regions near $N = 50$ and $N = 82$, showing as the predictions for Sr isotopic distribution can be modified by the assumptions done for the ^{85}Kr (ground and isomeric state) half-life and neutron capture cross section as well as the production of Ba isotopes can be deeply affected by the decay rates of Cs isotopes (new theoretical estimation for $A=134-135$ half-lives in plasma condition will be presented).

Attendance Type

Remote

Primary author: PALMERINI, Sara (University of Perugia and INFN Perugia)

Presenter: PALMERINI, Sara (University of Perugia and INFN Perugia)

Session Classification: Session 9

Track Classification: Nuclear Astrophysics