Contribution ID: **162**

Type: **Oral presentation**

AGB star nucleosynthsis: when new data from nuclear physics help to solve puzzles

Tuesday, 23 June 2015 18:10 (20 minutes)

Click here to download the template: <a href="https://agenda.infn.it/materialDisplay.py?mater Word , <a href="https://agenda.infn.it/materialDisplay.py?materialId=2&confId=5235">Lat

Low mass stars contribute to the chemical evolution of the Galaxy as well as more massive supernova progenitors. Indeed the limited amount of processed matter released into the interstellar medium by small objects is compensated by the large number of them.
At the late stages of their evolution, stars with mass smaller than 3Mo undergo the Asymptotic Giant Branch (AGB) phase, which has been found to be a unique site for synthesis of some nuclei heavier than Fe trough slow neutron capture reactions. AGB nucleosynthesis is also characterized by H-burning coupled with mixing phenomena, which have been proved to account for anomalies in the Li abundance and C, N and O isotopic ratio observed in stellar spectra and meteorite grains.
Nowadays the improvements in stellar spectroscopy and the growing number of geochemical analysis of meteorite grains offer new challenges and stronger constraints for the model of stellar nucleosynthesis and a high precision of the nuclear physics data employed in calculations is required.
We present how updated measurements of nuclear cross sections contribute to solve puzzles of oxygen isotopic mix in presolar grains of AGB origins. While despite accurate measurement of the reaction rate the high abundances of 26Al found in the same grains require a specific mixing model to be reproduced, similar to the one needed to trigger the formation of an extended neutron source in low mass AGB stars.
Finally, to show the crucial role of a proper estimation of electron density at the nucleus in the stellar plasma we present an evaluation of the complex problem of Li abundances in AGB stars in the light of an ad-hoc estimate of the 7Be time-of-life.

Primary author: Dr PALMERINI, Sara (INFN - LNS, Catania, Italy)

Presenter: Dr PALMERINI, Sara (INFN - LNS, Catania, Italy)

Session Classification: Nuclear Astrophysics

Track Classification: Nuclear Astrophysics