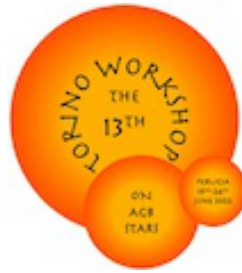


# The 13th Torino Workshop on AGB stars & the 3rd Perugia Workshop on Nuclear Astrophysics



Contribution ID: 29

Type: **Oral (in presence)**

## Measurements of s process neutron source cross sections

*Monday, 20 June 2022 12:25 (25 minutes)*

The slow neutron capture processes ("main" and "weak") build up elements heavier than iron through sequential neutron captures and  $\beta$ -decays, following the valley of stability from seed nuclei in the iron region. The neutron sources for these processes are the two reactions  $^{13}\text{C}(\alpha, n)^{16}\text{O}$  and  $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$ . Their measurement is quite difficult due to the astrophysically relevant energy ranges being far below the Coulomb barrier. The neutron background on the surface of the earth has so far been a prohibitive factor for experiments trying to push the limit of cross section measurements further down in energy. By going deep underground one automatically achieves a background reduction by 3-4 orders of magnitude, opening up possibilities to directly measure the low cross sections in the astrophysical range. I will discuss the campaign to measure  $^{13}\text{C}(\alpha, n)^{16}\text{O}$  at the LUNA 400 and MV accelerators and present the status and an outlook of the ongoing project SHADES that aims at a measurement of  $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$  at the LUNA MV accelerator in the Gran Sasso National Laboratory.

### Session

Experimental Nuclear Astrophysics

**Primary author:** BEST, Andreas (Istituto Nazionale di Fisica Nucleare)

**Presenter:** BEST, Andreas (Istituto Nazionale di Fisica Nucleare)

**Session Classification:** Nuclear Astrophysics