



Contribution ID: 339

Type: **Poster**

## Shell-model description of the nuclear structure of $^{25}\text{Mg}$

The  $^{25}\text{Mg}$  nucleus plays a critical role in nucleosynthesis processes, particularly in slow neutron capture process (s-process). The  $(\alpha, n)$  reaction on  $^{22}\text{Ne}$  producing  $^{25}\text{Mg}$  is the main neutron source in massive stars. In addition,  $^{25}\text{Mg}$  is the origin of the formation of two other nuclei in stellar environments, the proton capture on  $^{25}\text{Mg}$ , forms  $^{26}\text{Al}$  and the neutron capture on  $^{25}\text{Mg}$ , forms  $^{26}\text{Mg}$ . The  $J\pi$  assignments of  $^{25}\text{Mg}$  has a significant importance in determining the previous astrophysical reactions rates.

Theoretical results employing our PSDPF effective interaction, including excitation energies, spin-parity assignments, and transition probabilities, are systematically compared with experimental data. Our interaction describes quite well these observables that are crucial in calculating the above astrophysical reaction rates. We will present in our contribution a detailed discussion of our work.

**Author:** BOUHELAL, Mouna (LPAT, Echahid Cheikh Larbi Tebessi University, Algeria)

**Co-authors:** Ms SELIM, Abir (LPAT, Echahid Cheikh Larbi Tebessi University, Algeria); Prof. HAAS, Florent (IPHC, CNRS/IN2P3, Université de Strasbourg, France)

**Presenter:** BOUHELAL, Mouna (LPAT, Echahid Cheikh Larbi Tebessi University, Algeria)

**Session Classification:** Poster session

**Track Classification:** Nuclear Structure, Spectroscopy and Dynamics