Contribution ID: **11** Type: **Oral presentation**

# Elastic alpha scattering on Sm: adding experimental data to constrain a-OMP

*Wednesday 16 October 2024 11:10 (20 minutes)*

The p-nuclei, rich in protons, are created through a specific nucleosynthesis process involving numerous reactions such as (γ, n), (γ, p), and (γ, α) in explosive astrophysical events like supernovae. The research aims to adjust astrophysical scenarios to replicate the observed abundances of these nuclei. A significant challenge in this research is the uncertainty in alpha-nucleus optical potentials (α-OMP), crucial for the formation of heavy p-nuclei. Our collaboration aims to characterize α-OMP through elastic alpha scattering on Samarium isotopes (148Sm and 144Sm) at 20 MeV. These isotopes are quite important for p-process nucleosynthesis and are a relevant choice due to the existing data on 144Sm, offering a comparison possibility with 148Sm. This experiment was conducted at ALTO (IJCLab) in March 2024 by a collaboration between IP2I, GANIL, Demokritos, and IJCLab. The experimental setup focused on angular distribution measurement, involving high-resolution energy measurements using a split-pole spectrometer and silicon telescopes to better constrain the backward angles, where the OMP diverge the most. Simulations using Talys and SToGS (GEANT4 frameworks) were employed for preparation and analysis. The results of this experiment are currently being analyzed, and a complete cross-section angular distribution should be ready by October 2024.

## Length of presentation requested

Oral presentation: 17 min + 3 min questions

## Please select a keyword related to your abstract

Nuclear Theory and Experiments

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**Session Classification:** Morning session