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Photon Strength Function Measurements at iThemba LABS

Wednesday, 5 July 2023 10:00 (20 minutes)

The study of statistical nuclear properties is of importance not only in nuclear waste transmutation [Colonna2010] and nuclear fuel cycles [Report2006] but also in nuclear structure and nuclear astrophysics studies [Arnould2003]. These statistical properties - the nuclear level density (NLD), which describes the number of available energy levels in a nucleus for a given excitation energy, and the photon strength function (γ SF), which is the electromagnetic decay probability for a nucleus to either emit or absorb a gamma-ray, are critical ingredients into calculations of neutron capture cross sections and astrophysical reaction rates.

This presentation will discuss measurements of nuclear level densities and photon strength functions performed at iThemba LABS and their applications.

[Colonna2010] N. Colonna et al., Energy Environ. Sci. 3, (2010) 1910.

[Report2006] Report of the Nuclear Physics and Related Computational Science R&D for Advanced Fuel Cycles Workshop, DOE Offices of Nuclear Physics and Advanced Scientific Computing Research (2006).

[Arnould2003] M. Arnould and S. Goriely, Phys. Rep. 384 (2003) 1–84.

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Apply to be considered for a student ; award (Yes / No)?

No

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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