



Contribution ID: 351

Type: **Invited Talk**

What can we learn from the electromagnetic dipole response in atomic nuclei?

Thursday, 30 November 2023 15:40 (25 minutes)

The gamma-ray decay of nuclear states in the quasi-continuum offers valuable insights into nuclear structure effects and constraints on nucleosynthesis processes. Measurement of Nuclear Level Densities (NLDs) and Photon Strength Functions (PSFs) has played a pivotal role, and will continue to do so, as we enter a highly promising era for innovative measurements. This is primarily due to the establishment of advanced research infrastructure by numerous institutes worldwide. These institutes have made significant enhancements to particle and gamma-ray detection efficiencies, as well as the development or upgrade of radioactive ion beam facilities. Concurrently, new experimental and analytical techniques have emerged, enabling more reliable studies of PSFs and NLDs, even for unstable nuclei. This progress undoubtedly promises unparalleled insights into nuclear structure and provides crucial reaction rates for nucleosynthesis processes.

In this presentation, I will provide an overview of the major experimental and analytical advancements made and how they have laid the groundwork for ambitious measurements of PSFs and NLDs at radioactive and stable ion beam facilities. Additionally, I will discuss recent progress in investigating the nuclear structure underlying resonances, with a particular focus on the scissor's mode and the unexplained low-energy enhancement. The measurement of PSFs and NLDs also significantly enhance our understanding of nucleosynthesis processes, as will be demonstrated.

This work is supported by the National Research Foundation of South Africa under grant number 118840.

Attendance Type

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Session Classification: Session 5