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## Photoabsorption Cross-Section of Mg 24.

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Accurate nuclear data is a key factor in determining the suitability and reliability of many theoretical nuclear models and large scale calculations. This is especially true for cases where the systematic calculations are challenging such as light and deformed nuclei. The photoabsorption cross section and the relative branching ratios for these nuclei are of particular interests to investigate their nuclear structure and also for their usage in modeling of astrophysics scenarios as the propagation of ultra high energy cosmic rays (UHECRs). The presented project investigates the total photoabsorption cross section via excitation of the giant dipole resonance of  $^{24}\text{Mg}$ , one of the keystone nuclei in these propagation simulations. The giant dipole resonance was probed using 200 MeV protons via the virtual photon production method. This was done at the iThemba LABS facility using the Separated Sector Cyclotron and the K600 Spectrometer in the zero degree configuration mode. The high resolution focal plane detection suite combined with the Eikonal model for virtual photon production proved to be an effective combination for extracting the electromagnetic response of light nuclei as is shown in the  $^{24}\text{Mg}$  case. The obtained photoabsorption spectrum is presented alongside the total photoabsorption cross section obtained from real gamma measurements as well as a comparison to data from RCNP, Japan using the GRAND Raiden spectrometer.

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

Yes

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

PhD

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