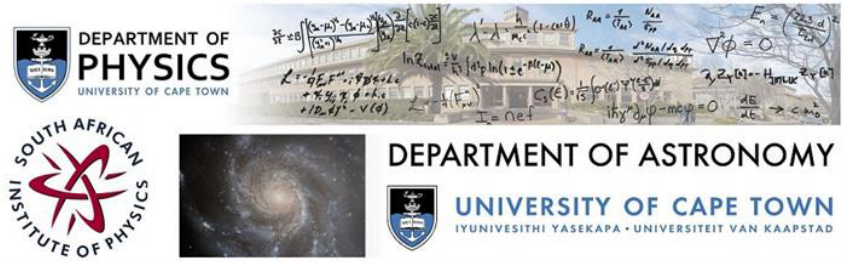

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Determination of spectroscopic quadrupole moment of the first excited state in 32S.

Tuesday, 5 July 2016 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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In this work we aim to determine the spectroscopic quadrupole moment (Qs) of the first excited state (2+) at 2230.6 keV in 32S via Coulomb excitation at safe bombarding energies. The experiment is performed at the iThemba LABS's AFRODITE vault, where 32S beams at 118 MeV are bombarded onto a 194Pt target of 1 mg/cm2 thickness. The beam energy is chosen such that the separation distance between the nuclear surfaces is greater than 6.5 fm in order to avoid nuclear interactions. An S3 silicon detector with 24 rings and 32 sectors is placed upstream at backward angles to detect the scattered particles. Gamma rays are detected with the AFRODITE clover array. This particle-gamma coincidence experiment allows for an angular distribution and Doppler correction of the gamma rays emitted at 9% the speed of light. The cross sections (or gamma-ray integrated yields) measured as a function of the ring scattering angle are sensitive to second-order perturbation effects in Coulomb excitation, and will yield information on the reorientation effect (an effective technique of determining (Qs)).The gamma-ray integrated yields obtained from the experiment will be compared with the GOSIA simulations to get the Qs(2+) value.

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