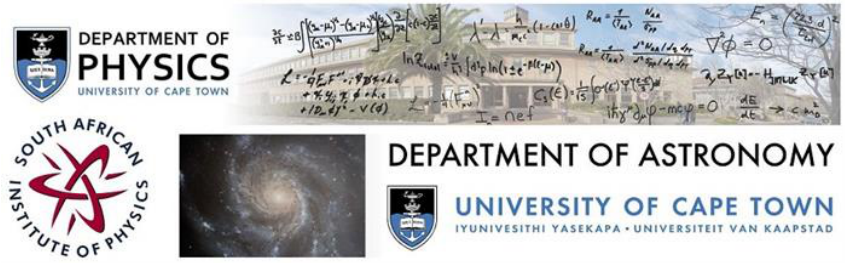

Contribution ID: **424** Type: **Oral Presentation**

Coulomb excitation reorientation effect of the first 2⁺ state at 4.439 MeV in ¹²C

Tuesday, 5 July 2016 11:30 (20 minutes)

Abstract content
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The reorientation effect (RE) plays a major role in Coulomb excitation theory as it facilitates information about the shape and degrees of quadrupole collectivity of even-even nuclei via measuring the diagonal matrix element <2₁⁺||E2||2₁⁺» of the first 2⁺ state. This in turn proportional to the spectroscopic quadrupole moment [Q_S(2₁⁺)] which provides direct information about the shape with its sign precisely. A safe Coulomb excitation re-orientation effect measurement was performed at TRIUMF accelerator facility to determine the sign and magnitude of Q_S(2₁⁺) in ¹²C. The first 2⁺ state at 4439 keV in ¹²C was Coulomb excited through inelastic scattering of ¹²C beam at ˜ 4.97 MeV/u energy impinging on a 1 mg/cm² thick ¹⁹⁴Pt target. The de-excited γ-rays were detected with highly-efficient and segmented TIGRESS clover detector array and the scattered particles were detected in coincidence with γ-rays using annular double sided silicon CD type detector (S2) which contains 24 rings and 32 sectors. The data have been analysed employing particle-γ coincidence, energy sharing and timing conditions. The Doppler corrected sum γ-ray spectrum shows the evidence for 4439 keV in ¹²C. The experimental results and the details about determination of Q_S(2₁⁺) will be presented during conference.

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Primary author: Dr MUKHI, Kumar Raju (University of the Western Cape)

Co-authors: UWC AND TRIUMF COLLOBORATION, , (University of the Western Cape & TRIUMF, Canada); Dr ORCE, Nico (University of the Western Cape)

Presenter: Dr MUKHI, Kumar Raju (University of the Western Cape)

Session Classification: Nuclear, Particle and Radiation Physics (1)

Track Classification: Track B - Nuclear, Particle and Radiation Physics