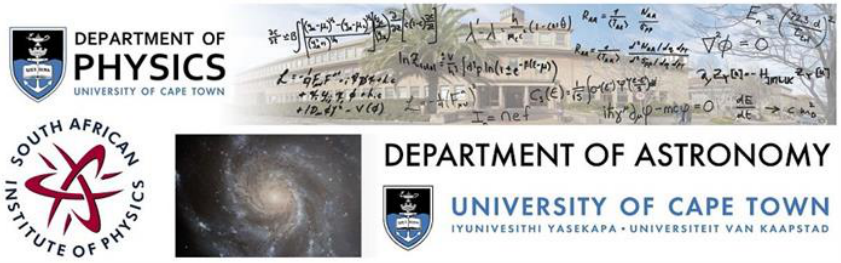

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Zig zag of quadrupole shapes in sd-shell

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

Abstract content
   (Max 300 words)
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The work presented in this paper pertains measuring the sign and magnitude of the spectroscopic quadrupole moment for the first excited 2+ state in 36Ar. This will be done through a Coulomb excitation measurement using the reorientation effect at safe energies. The measurement will be performed using a distance of closest approach of at least 6.5 fm as proposed by Spear. This separation between the beam and target ensures that there are no nuclear excitations taking place which could obscure the results. The spectroscopic quadrupole moment was previously measured in 1971 by Nakai using a 206Pb target with a minimum safe distance of 4.3 fm. This lead to a large uncertainty in the value of Qs(2+) = 11(6) efm2 in 36Ar, which is currently the accepted value of Qs on the NNDC. The first 2+ state of 36Ar will be excited by bombarding a 1mg/cm2 194Pt target with 36Ar beams at 134(1) MeV. The reorientation effect plays a pivotal role in determining Qs because it provides information about the diagonal matrix elements. The data will be analysed using Gosia to extract the diagonal matrix elements which in turn will be used to calculate the spectroscopic quadrupole moment. An accurate measurement of Qs will help in understanding the shape evolution and deformation of nuclei in this region, in particular the zig zag of quadrupole shapes observed at the end of the sd shell.

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