

Local suppression of collectivity in the N=80 isotones at the Z=58 subshell closure

Thursday, 5 December 2013 15:15 (20 minutes)

Recent data on transition strengths, namely the hitherto unknown B(E2) values of radioactive Nd-140 and Sm-142 in the N=80 isotones, have suggested that the proton 1g_{7/2} subshell closure at Z=58 has an impact on the properties of low-lying collective states [1,2].

The unstable, neutron-rich nuclei Nd-140 and Sm-142 were investigated via projectile Coulomb excitation at the REX-ISOLDE facility at CERN with the high-purity Germanium detector array MINIBALL. The measurements demonstrate that the reduced collectivity of Ce-138 is a local effect possibly due to the Z=58 subshell closure and requests refined theoretical calculations. The latter predict a smoothly increasing trend [3,4].

[1] C. Bauer et al., submitted to Phys. Rev. C (2013)

[2] G. Rainovski et al., Phys. Rev. Lett. 96 (2006) 122501

[3] D. Bianco et al., Phys. Rev. C 85 (2012) 034332

[4] Ch. Stoyanov, private communication

Supported by the BMBF (05P12RDCIB) and ENSAR

Primary author: Mr BAUER, Christopher (TU Darmstadt)

Co-authors: Prof. RAINOVSKI, Georgi (University of Sofia); Prof. PIETRALLA, Norbert (TU Darmstadt); Mr STEGMANN, Robert (TU Darmstadt)

Presenter: Mr BAUER, Christopher (TU Darmstadt)

Session Classification: Nuclear Physics: Parallel Session I