

Abstract Submitted
for the SES08 Meeting of
The American Physical Society

Isotopic shifts in light Kr nuclei and evidence of N=36 magicity near the rp-process path J.K. SHARMA, Physics Department, St. Johns College, Agra-282002, India, M.M. SHARMA, Physics Department, Kuwait University, Kuwait 13060 — Neutron-deficient Kr isotopes play an important role in the rp- process nucleosynthesis.¹ The isotope ^{72}Kr has been described variously as a waiting-point nucleus. We have examined the experimental data on isotopic shifts in light Kr nuclei close to the proton drip line within the framework of the relativistic mean-field theory. Using the Lagrangian model with the vector self-coupling of ω meson,² it is shown that ^{72}Kr is oblate in its ground-state, which exhibits a shape-coexistence with a prolate shape. It is shown that the negative isotopic shift for ^{72}Kr provides an evidence for a neutron shell closure at $N = 36$. This is affirmed by the presence of a shell gap in the single-particle spectrum in the deformed space. This lends credence to the isotope ^{72}Kr as being a waiting-point nucleus in the rp-process path.

¹H. Schatz et al., Phys. Rep. 294 (1998) 167.

²M.M. Sharma, A.R. Farhan, S. Mythili, Phys. Rev. C61 (2000) 054306.

Madan M. Sharma
Kuwait University

Date submitted: 14 Aug 2008

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