

Exotic structures near the drip lines

M.M. Sharma¹, J.K. Sharma², A.A. Saldanha¹

¹Physics Department, Kuwait University, Kuwait 13060.

²Physics Department, St. John's College, Agra-282002, India.

I will discuss surprising results of our study of nuclei in the rp-process region. It will be shown that due to presence of large shell gaps in deformed space, we have uncovered the existence of double magicity of both protons and neutrons in several $N=Z$ nuclei near the rp-process path [1]. These nuclei are known to contribute to large abundances in the rp-process nucleosynthesis and have been shown to be waiting-point nuclei in this process. I will also discuss the emergence of stability of nuclei beyond the neutron drip line in our recent study of the r-process region near $N=126$. Interesting features on exotic structures of nuclei near the drip lines will be presented [2].

[1] M.M. Sharma and J.K. Sharma, AIP Proceedings, Vol. 1224 (2010) p. 175.

[2] M.M. Sharma and A.A. Saldanha, submitted (2010).