

Overview of shell evolution in the N=28-40 region and its analogy to lol

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Neutron-rich nuclei in the N=28-40 region provide a good testing ground of shell evolution. The conventional N=28 magic number is known to disappear in S, Si, and Mg isotopes, and a new magic number N=34 had been predicted since 2001. One of the most important ingredients to cause those phenomena is the monopole interaction between a proton in the sd shell and a neutron in the pf shell. In this talk, I will show how such a shell evolution occurs on the basis of the cooperative and competitive effect of the central, tensor, and spin-orbit forces, in comparison to experimental results taken by the SEASTAR campaign. The shell evolution driven by those forces should lead to similar behaviors in other regions. I will focus on the similarity between calcium and oxygen region, especially the breaking of the doubly magic nature at ^{60}Ca and ^{28}O .

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