

Chiral EFT forces, shell evolution, shape coexistence and fission: are they in the same cup of tea ?

The shell evolution is one of the characteristic features of exotic nuclei, occurring as one moves on the Segre chart. Recently we pointed out [1] that the same mechanism, particularly its tensor-force contribution, has a significant effect on the shape coexistence. In parallel, we can now see that the QCD-based chiral EFT forces produce exactly the same shell evolution trends as what we have discussed so far. These new developments can be related to another open problem of nuclear physics: why and how fission occurs particularly at its initial stage (including spontaneous ones) ?

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[1] T Otsuka and Y Tsunoda, J. Phys. G: Nucl. Part. Phys. 43 (2016)
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