Shell evolution in the newly-explored neutron-rich region around Z=82 and far beyond N=126: experimental details

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The study of exotic nuclei has shown that significant changes of the well known shell structure along the stability valley occur, especially for very neutron-rich nuclei with mass numbers below 100. Little is known on the evolution of Z=82 shell closure beyond N=126 and on the neutron-rich nuclei around ^{208}Pb, because of the experimental difficulties to reach such nuclei [1]. Their study is relevant also for nuclear astrophysics, since the measurement of their β-decay half lives will improve the understanding of the r-process stellar nucleosynthesis in heavy nuclei [2].

In this talk results from an experiment aiming at the population of exotic neutron-rich isotopes around ^{208}Pb will be presented.

Many neutron-rich isotopes were identified for the first time and a significant number of new isomers were discovered.

Preliminary experimental results will be presented.

[1] M. Pfutzner et al., Phys. Let. B 444, 32-37 (1998).
[2] I.N. Borzov., Phys. Rev. C 67, 025802 (2004).
[3] H. Geissel et al., Nucl. Instr. Meth. B 70 (1992) 286.
[4] S. Pietri et al., Nucl. Instr. Meth. B 261 (2007) 1079.
[5] R. Kumar et al., Nucl. Instr. Meth. A 598 (2009) 754.