Study of neutron rich tellurium isotopes by laser spectroscopy

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Laser spectroscopy based on resonant ionization of laser desorbed atoms has been used to study the neutron rich tellurium isotopes. These isotopes are located above the magic shell Z=50. The variation of the mean square charge radius ($\delta\langle r^2\rangle$) in this region shows a change of slope at N=82 (see figure). We also see that, the more Z differs from Z=50, the more important is the kink at N=82. Thus the measurements of $\delta\langle r^2\rangle$ of most of the Te isotopes gives us crucial informations on its behaviour near the magic numbers Z=50 and N=82. Moreover, the measurements of quadrupole and magnetic moments of the odd Te isotopes and isomers inform us about the structure of the states.

We have performed these experiments with the COMPLIS facility at ISOLDE-CERN. The technique is based on implantation of the ISOLDE beam on a substrate, laser desorption of the implanted atoms and then laser ionization.

We have measured the isotope shift and the hyperfine structure of several neutron rich Te isotopes, from which we have extracted the magnetic and quadrupole moments and the mean square charge radii.

Here we show all the results obtained on these isotopes and their comparison with the existing data of the other elements near Z=50. The experimental $\delta\langle r^2\rangle$ is compared with that obtained from several mean field calculations.

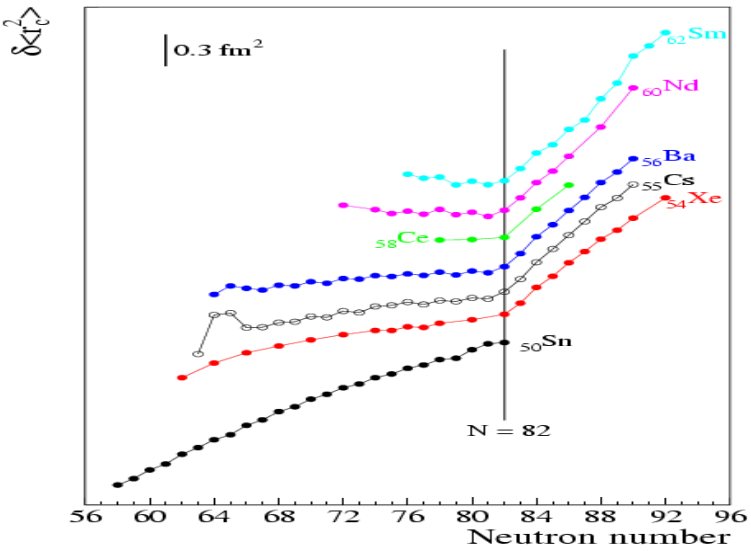

Figure : changes in the mean charge radius for elements above Z=50