The 186Hg ground state deformation puzzle

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for the IS539 experiment

Since the 70-s, the structure of neutron-deficient Hg isotopes has attracted considerable attention. Their mean square nuclear radii show a particular staggering, which was unique in the nuclear chart [1] until very recently [2]. This phenomenon was interpreted as a change in the ground state structure and consequently on the ground state shape around A=186 [3] and the existence of shape isomerism in the odd isotopes. Recent measurements at ISOLDE extended the study of the mean square radii in Hg nuclei down to 179Hg and confirmed earlier results for A < 185 [4].

We have recently studied the beta decay of 186Hg using the total absorption technique with the goal of inferring the shape of the ground state of 186Hg from the distribution of the beta strength in the daughter, a method that has been applied earlier for nuclei in the A=80 and A=190 regions (see for example [5,6]). The analysis of the beta decay data from the 186Hg case required the development of a new analysis technique because of the existence of highly converted gamma-ray transitions in the 186Au daughter nucleus [7]. The comparison of the results of our measurements with QRPA theoretical calculations shows a quite different picture than expected: 186Hg seems rather mixed in its ground state, with a dominantly prolate component [7]. In this presentation these results will be presented and future perspectives will be discussed.

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