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The ^{186}Hg ground state deformation puzzle

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The structure of neutron-deficient Hg isotopes has attracted considerable attention since the 70-s. They present a particular staggering in the mean square nuclear radii, which is unique in the nuclear chart [1]. This phenomenon was interpreted as a change in the ground state structure and consequently on the ground state shape around $A=186$ [2]. A recent work at ISOLDE has extended the study of the mean square radii in Hg nuclei down to ^{179}Hg and confirmed earlier results for $A < 185$ [3]. We have recently studied the beta decay of ^{186}Hg using the total absorption technique with the idea of inferring the shape of the ground state of ^{186}Hg 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 [4,5]). The analysis of total absorption data from this particular case required the development of a new analysis technique because of the existence of highly converted gamma transitions in the ^{186}Au daughter nucleus [6]. The comparison of the results of our measurements with QRPA theoretical calculations shows a quite different picture than expected: ^{186}Hg seems rather mixed in its ground state, with a dominantly prolate component [6]. In this presentation these results will be presented and future perspectives will be discussed.

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