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Study at the corner stone of the region of deformation around $A \sim 100$

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Exhibiting one of the most sudden onset of deformation, the neutron-rich $A=100$ mass region has recently attracted a vast interest from the nuclear structure community.

The influence of the neutron contribution to the deformation has been already well investigated in the Sr and Zr isotopes; however, a better understanding of the role played by the proton orbitals was needed to draw a complete picture of the mechanisms involved in the sudden onset of deformation.

A smooth development of collectivity has been recently observed in ^{96}Kr via mass measurements and Coulomb excitation. The Rb isotopes exhibit a step increase of the quadrupole moment at $N=60$, indicating deep structural changes by just adding one proton compared to the Kr case.

In the present study, excited states of neutron-rich $^{97,99}\text{Rb}$ were populated for the first time via Coulomb excitation using the REX-ISOLDE facility and the MINIBALL spectrometer. Complementary to the previous magnetic moment measurement, comparisons of the results with particle-rotor model calculations allowed for unambiguous assignment of the $\pi g_{9/2}[431]3/2^+$ Nilsson-model orbital as the configuration of the ground state of ^{97}Rb on top of which the rotational band is built. The degree of deformation in the band is essentially similar to what has been observed well inside the deformation region around $A \sim 100$, such as in the Sr and Zr cases.

Moreover, this study highlights the potential of the Coulomb excitation technique to obtain further spectroscopy information far from stability.

Revealing a similar structure, the ^{99}Rb case constituted a challenge, pushing the limits of studying very short lived post-accelerated radioactive beams.

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