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Spectroscopy of the neutron-deficient 200Po isotope by Coulomb excitation, using REX-ISOLDE, RILIS and the Ge MINIBALL array

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In the region around the Z=82 shell closure with neutron number around midshell between N=82 and N=126, shape coexistence occurs at low excitation energy. This phenomenon is well-established in the neutron-deficient polonium isotopes as evidenced by low-lying rotational like bands intruding in the low-energy structure.
Proton-pair excitations across the magic Z=82 along with the strong proton-neutron interaction in the vicinity of the neutron midshell are considered as the driving mechanism for shape coexistence in this region. The strong perturbation of the energy-level systematics in the very light polonium isotopes is also interpreted as arising from the interaction between the regular and intruder structures.
While the onset of the deformation in the light Po isotopes is reasonably well established experimentally, questions remain concerning the sign of deformation and the magnitude of the mixing between different configurations. Furthermore, controversy is present with respect to the transition from the vibrational-like character of the heavier Po isotopes to the structure driven by shape coexistence as observed in the lighter Po isotopes.

In September 2009, the spectroscopy of the even-mass neutron-deficient 200Po key nucleus was performed using post-accelerated (up to 2.85 MeV/u) radioactive polonium beam from REX-ISOLDE (CERN) followed by Coulomb excitation in a 'safe'energy domain. The gamma rays were detected by the germanium MINIBALL detector array.
In the presentation, preliminary spectra and results will be presented. The differential cross section extraction will allow us to deduce both the transition and diagonal matrix elements for this nucleus.
In the future, combined with the spectroscopy of 198Po and 202Po using the same technique, the obtained reduced transition matrix elements will be compared to beyond mean field models and will serve as important bench marks to test of the model and interactions used.

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