On the β-decay of ^{70}Kr

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In this contribution, we present preliminary results of the analysis of the β-decay of ^{70}Kr from the experiment NP1112-RIBF93. The main goal of the experiment was to study isospin-related effects and p-n pairing signatures in the region of $A \sim 70$ using the information obtained from the β-decays of ^{70,71}Kr.

To produce the isotopes of interest the fragmentation of a ^{78}Kr primary beam with an energy of 345 MeV/nucleon was used. Average beam currents of 40 particle nA were provided by the RIKEN Nishina Center accelerator complex. The ^{78}Kr primary beam impinged on a 5 mm thick ^{9}Be target to produce a cocktail radioactive beam. The fragments produced were then separated and selected using the BigRIPS separator. The ions were then implanted in the WAS3ABi active stopper, surrounded by the EURICA γ-ray spectrometer[1] for the study of their β decay.

Gamma rays associated to the de-excitation of states populated in the daughter nucleus ^{70}Br were identified using conventional β-γ and β-γ-γ coincidence techniques similarly to the procedure followed in Ref. 2). For more details see Refs. 3, 4). The analysis has also allowed us to improve the precision of the deduced β-decay half-life and construct the level scheme of states populated in the decay, which extends up to 3.3 MeV excitation energy in ^{70}Br.

In Fig. 1 we present the deduced Gamow-Teller β strength in the daughter nucleus compared to the predictions of the *pn* quasiparticle random-phase approximation (pnQRPA) calculations for two possible deformation minima in ^{70}Kr.[5] The calculations presented here are based on the SLy4 force, which is a well tested force throughout the whole nuclear chart. Alternative theoretical calculations are also performed using a pseudo-LS model.[6] We are presently working in the final details of a publication[7] based on this study.

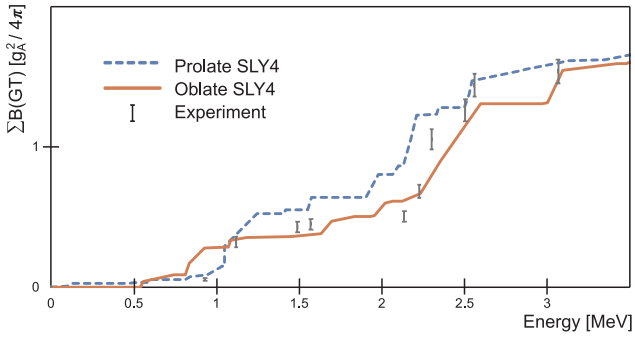

Fig. 1. Preliminary comparison of the experimental (black) and calculated accumulated B(GT) values for the ^{70}Kr $\rightarrow$ ^{70}Br β decay.[5] The experimental B(GT) uncertainties are determined by the feeding error of the levels and the error of the half-life. The orange solid line corresponds to the values calculated for the oblate minimum, the blue dashed line corresponds to the prolate minimum of the ground state of ^{70}Kr.

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