

Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

The beta-decay properties in the vicinity of ^{78}Ni ¹ IVAN N. BORZOV, JIHIR (Oak Ridge) and IPPE (Obninsk) — The beta-decay properties of neutron-rich Cu to Ga nuclei in the vicinity of the doubly magic ^{78}Ni have been calculated within the density-functional approach plus continuum QRPA (DF+CQRPA) [1]. The framework allows for a fully microscopic description of the Gamow-Teller (GT) and first forbidden (FF) transitions between *dsg*h and *fpp* shells. The new theoretical predictions are compared with our previous ones, with the standard FRDM calculations [2] and recent experimental data. Of particular importance are new high quality gamma ray spectroscopy data obtained for Zn to Ga isotopes with $N > 50$ at Holifield Radioactive Ion Beam Facility (HRIBF). In ^{78}Ni region, the half-lives calculated with blocking of the odd-proton on the $1p_{5/2}$ -orbital agrees with the data better than the ones with no blocking as well as the ones from standard FRDM calculations used for the r-process modeling. The high-energy first forbidden transitions in the nuclei with $N > 50$ populating low lying excited levels in the daughter nuclei produce a strong impact on the total half-lives and especially on the delayed neutron emission. The effect of reduction of the P_n -values compared to the pure GT- approximation in $N > 50$ isotopes [1] will be discussed.

[1] I.N. Borzov, Phys. Rev. C 67, 025802 (2003); Phys. Rev. C 71, 065801 (2003).

[2] P. Moeller, B. Pfeiffer and K-L Kratz, Phys. Rev. C 67, 055802 (2003).

¹This work was supported by JIHIR (ORNL, Oak Ridge).

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Date submitted: 29 Jun 2011

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