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DIFFERENTIAL INTENSITIES OF TWO NEUTRINO DOUBLE BETA-DECAY OF SELENIUM-82

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Stable isotope selenium-82 is a perspective object for double beta decay investigations and searches for neutrinoless transition. It is used as a 2-source in large-scale projects - NEMO-3, SuperNEMO, CUPID-0. In the recent experimental works [1,2] two-neutrino channel for 82Se was examined in order to determine nuclear mechanism of 2-decay. The question is whether contribution of the single lowest 1+ level dominates in the total transition amplitude, and SSD –mechanism takes place, or otherwise higher state dominates, that corresponds to HSD-mechanism. The effective method to distinguish these possibilities is to measure energy distribution of emitted electrons, which has different form for SSD and HSD mechanisms [3,4]. It should be noted that for 82Se the quantum numbers of intermediate nucleus 82Br ground state is 5-, so the first excited 1+ - state of 82Br should be taken into account. The energy spectra of electrons produced in 2-decay are calculated. For SSD mechanism the 82Se 2- amplitude is determined by the product of two nuclear matrix elements, where first excited low-lying 1+ state of 82Br is involved. Assumption has made, that the measurement of total intensity of two-neutrino process can give information on the value of these matrix elements, additional to the results, based on charge-exchange reactions study.

1. R. Arnold et al , Eur. J. Phys. C, V. 78, 821 (2018)
2. O. Azzolini et al, Phys. Rev. Lett. V. 123, P. 262501 (2019)
3. Semenov S.V., Šimkovic F., Khruschev V.V., Domin P., Phys. Atom. Nucl. 2000,V.63, P. 1196 (2000)
4. Šimkovic, F., Domin, P., Semenov S.V., . Phys. G., V. 27, P. 2233 (2001)

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