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Study of beta-delayed neutron decay of ^8He

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The nucleus of ^8He is characterized by the largest neutron-to-proton ratio among all known particle-stable nuclei. Beta decay of ^8He has been investigated by Björnstadt et al. [1] and Borge et al. [2, 3] where β -delayed γ -ray, neutron and triton spectra were measured. In this contribution, the results of the new study of β -delayed neutron decay branch of ^8He will be presented. The energy spectra of the emitted neutrons were measured in the energy range of 0.5 – 7 MeV using the time of flight VANDLE spectrometer at the ISOLDE Decay Station. Using coincident gamma ray measurement, components of the βn spectrum corresponding to transitions to the ground- and first excited state of ^8Li were disentangled for the first time. The new data will be compared with the results of previous measurements and confronted with the predictions of theoretical models.

[1] T. Björnstadt et al., Nucl. Phys. A366 (1981) 461

[2] M.J.G. Borge et al., Nucl. Phys. A460 (1986) 373

[3] M.J.G. Borge et al., Nucl. Phys. A560 (1993) 664

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