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# Electron Capture and β+ decay of 8B into highly excited states of 8Be

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## Abstract

The interest in the decay of 8B into 8Be both from nuclear physics and astrophysics has led to multitude of studies over the last decades. From the astrophysical point of view, the 8B decay is the only source of solar neutrinos with an energy higher than 2 MeV mainly coming from the most intense branch of the 8B decay to the 3 MeV state of 8Be that is followed by the break up into two alphas.

From the nuclear structure point of view, 8B is the only well-established proton halo nucleus in its ground state and its decay gives us access to the interesting 2+ doublet at 16.6 and 16.9 MeV in 8Be. These states have dominant configurations as 7Li+p and 7Be+n respectively and constitute an attractive isospin mixed doublet as stated in the reaction study done by von Brentano [1]. Prior to this study, the 16.992 MeV state, only populated via electron capture, was hinted once in a previous experiment at JYFL [2].

In this contribution, I will describe a new experiment done at ISOLDE-CERN where the 16.9 MeV state has been observed with enough statistics to allow for an R-matrix analysis of the full α decay spectrum, testing the current knowledge of the 2+ doublet.

References
[1] P. von Brentano, Phys. Rep. 264 (1996) 57
[2] O. Kirsebom et al., Phys. Rev. C 83 (2011) 065802

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