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Transfer reactions with 7Be to study the cosmological lithium problem

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Nuclear reactions involving the production and destruction of 7Be is very much relevant in search for a solution to the cosmological lithium problem. In the experiment IS 554, we plan to measure with better accuracy the destruction of 7Be through resonance excitation of 7Be (d,p) 8Be*. This is required before one can invoke solutions beyond nuclear physics, particularly the newly conjectured light electrically neutral particles X that have substantial interactions with nucleons. As of now, we plan to use the scattering chamber installed on the second beamline of the HIE-ISOLDE facility. The chamber has sets of DSSD covering about 8 deg - 150 deg and thickness suitable for our experimental goals. We would be detecting the protons and alphas in coincidence. The Geant4 simulations in the NPTool framework would be presented.

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