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Breakup and transfer reactions with ^{7}Be to study ^{7}Li abundance anomaly

The production and destruction processes of the ^{7}Be nucleus is of utmost importance in studying the ^{7}Li abundance anomaly. Before invoking solutions beyond nuclear physics the relevant reaction rates need to be measured with better accuracy. The production of ^{7}Be by the radiative capture reaction ^{3}He + ^{4}He $\rightarrow$ ^{7}Be + γ can be measured by the time reversed Coulomb breakup reaction of ^{7}Be, preferably in the presence of heavy targets. This would enable measurements at low relative breakup energies
(astrophysical energies) between the fragments, thereby extracting information about the required radiative capture reaction. This avoids required extrapolation in the direct method from measurements performed at higher energies. On the other hand, the destruction of ^{7}Be through resonance excitation in the transfer reaction ^{7}Be(d,p)^{8}Be* deserves attention in the context of contradiction between theory and observation. Status on the preparation including simulation of the upcoming experiment at HIE-ISOLDE (IS 554) to study the ^{7}Be + d reaction will be discussed.

Author: Dr GUPTA, Dhruba (Bose Institute)

Co-author: SAHA, Swapan K. (Bose Institute)

Presenter: Dr GUPTA, Dhruba (Bose Institute)