



Contribution ID: 31

Type: **Submitted**

Reactions with ^9Li at HIE-ISOLDE

Wednesday 6 December 2017 10:30 (20 minutes)

The increase of energy of the ISOLDE radioactive beams made possible through the HIE-ISOLDE project has opened new possibilities for reactions studies with exotic beams. A particular challenge is presented by the light nuclei where unbound final states play an important role and the role of the continuum is by now known to be important. Theoretical work on the reaction mechanisms involved aiming for a detailed description of the reaction processes is ongoing and evolves as new experimental data appear.

I shall report on results from two experiments performed in the Scattering Experiments Chamber (SEC), both using ^9Li as reaccelerated radioactive beam. The first experiment ran November 2016 at XT02 at a beam energy of 6.8 MeV/u on a deuterated polyethylene target. The second experiment takes place late October 2017 at XT03 with a beam energy close to 8 MeV/u on a tritium-containing Ti target. Many reaction channels are open at these energies, but the major ones of interest are one- and two-neutron transfer reactions to the isotopes ^8Li to ^{11}Li . Particularly interesting are the final channels leading to ^{10}Li and ^{11}Li where knowledge on the detailed structure is still lacking in spite of many earlier experiments at widely different beam energies.

The presentation will give an overview of the experimental set-up used and report on the results that have been extracted so far. A comparison will also be given between the current results and the $^9\text{Li}+^2\text{H}$ experiments carried out earlier at REX-ISOLDE at beam energies of 2.3 MeV/u and 2.8 MeV/u.

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Session Classification: Facilities Session 2