
Experiment Title Total Reaction Cross Section from the interaction of 6Li ions with 28Si and 197Au.

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Short presentation of the scientific project

The direct measurement of the total reaction cross section σR, and of the different reaction channels as a function of the beam energy, for light weakly bound nuclei 6Li, on different targets like 28Si and 197Au is related to relevant open problems. The measurement of σR provides an independent test of the different optical models from the analysis of elastic scattering data, by comparing the corresponding calculated σR with the value measured directly. Data on the excitation functions for σR(E), elastic, inelastic, breakup cross section, and reaction channels which are accompanied by the strong dissipation of the kinetic energy, are needed, for example, to clarify the influence of breakup and transfer on the fusion process.
We propose to measure the total reaction cross section σR(E) of 6Li on 28Si and 197Au targets; and to measure the energy of α - particles and the yield of “α production”- reaction channels, with/without γ-emission, as a function of the beam energy, in the energy region around Coulomb barrier. We plan to use the CPI-modified transmission method together with the 4 π – γ technique.

Beam time request(unit=8 hours) : 6 units
Desired Period : February 2011

Desired beam properties

Type : 6Li
Energy(MeV) : 32
Intensity(p/nA) : <0.1pnA
Vacuum Requests : no special

Special requirements for detectors, electronics,aquisition system

Desired beam line-channel with the Pb-shield box

Minimal information needed for the radiological risk evaluation:

a)Source activity :
b)Use of open sources :
c)Estimate of the residual activity as a result of iradiation :
d)Means of storage/transportation for iradiated targets :