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Screening potential of the d(d,p)t reaction in liquid In and Sn measured for 10 $\leq E_{D_3^+} \leq$ 60 keV YUKI HONDA, Research Center for Electron Photon Science, Tohoku University, JIROHTA KASAGI COLLABORATION[1] — Although large values of the screening potential of the d+d reaction in metals were reported, the experiments so far performed are not faultless but possibly bring large errors due to uncertainties of target deuteron density. We have found a new reaction process which ensures to determine the screening potential more accurately. The process is unique to the molecular beam: we call it "cooperative colliding mechanism"(CCM). Liquid In and Sn were bombarded by D_3^+ beams from 10 to 60 keV. Protons from the d(d,p)t reaction were measured by a Si detector. Characteristics of the results are: 1. For the proton peak, the shape is very broad and is largely skewed. 2. An excitation function of the yield is different from the thick target yield of the d(d,p)t reaction. 3. No yields of the d+d reaction for the bombardment with an atomic D^+ beam. These features are well explained by introducing the CCM in which two deuterons in a molecule collide after one deuteron in the molecule is elastically scattered by a host metal. Thus the target deuteron density can be determined very accurately. Detailed analyses give reliable information on the screening potential of the d+d reaction surrounded by conduction electrons; they are Ue=100±50 and 350±50eV for In and Sn, respectively.

[1]Research Center for Electron Photon Science, Tohoku University

Yuki Honda
Research Center for Electron Photon Science, Tohoku University

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