STUDY OF THE INFLUENCE OF PROJECTILE BREAKUP ON THE FUSION CROSS SECTION OF ^{6,7}Li + ^{12}C, ^{59}Co

F.A. Souza, M.G. Munhoz, J. Takahashi, N. Carlin, M.M. de Moura, A.A.P.Suaide, E.M. Szanto, and A. Szanto de Toledo

Departamento de Fisica Nuclear, Laboratorio Pelletron, Universidade de São Paulo, C.P. 66318, 5315-970 São Paulo, Brasil.

The recent availability of radioactive nuclei beams motivated the investigation of fusion reactions involving weakly bound nuclei. The cross section enhancement generally observed at sub-barrier energies is understood in terms of dynamical processes arising from couplings to collective inelastic excitations of the target and/or projectile [1]. However, in the case of reactions where at least one of the colliding nuclei has a sufficient low binding energy so that breakup becomes an important process, conflicting experimental and theoretical results are reported in recent papers [2-7]. A short review of the theoretical and experimental status of this problem is presented . The ^{6,7}Li + ^{12}C, ^{59}Co, ^{115}In fusion reactions are used to investigate the effect of breakup on the fusion cross section [8]. These measurements help to establish the influence of the projectile breakup on the fusion process at near-barrier energies and contribute to the determination of how the mass of the target affects the process, as well as the influence of the incomplete fusion yield. Experimental results are compared to prediction of Coupled Channel Calculations.

A final tuning for the coupling of the breakup channel, as well as the correct description of the reaction dynamics, requires the explicit measurement of yields leading to breakup itself [9-11]. In this presentation we address this issue.

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