

Breakup of Weakly Bound ^{17}F by ^{208}Pb at 170 MeV Bombarding Energy *

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It has been demonstrated that the coupling of nuclear reaction and nuclear structure degrees of freedom of fusing nuclei leads to the enhancement of subbarrier fusion cross section. The advent of radioactive beams stimulates studies of subbarrier fusion with weakly bound nuclei. The large r.m.s. radius associated with these nuclei and the excitation to the soft dipole resonance could reduce the barrier for fusion. However, the influence of the breakup of weakly bound nuclei on subbarrier fusion is still an open question. We have measured the breakup of 170 MeV ^{17}F bombarding a ^{208}Pb target. The breakup fragments were identified by a double sided strip detector and Si surface barrier detector $\Delta\text{E-E}$ telescope. The angular distribution of the ^{16}O fragments was found to disagree with the dynamical calculation and the coupled discretized-continuum channels (CDCC) calculation. The CDCC calculations underpredict the energy spectra of ^{16}O by a factor of 8. Further experiments at energies closer to the Coulomb barrier for investigating the influence of breakup on fusion and the discrepancy between measurement and calculation will be discussed.

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