

Study of the fusion reaction of ${}^6\text{Li} + {}^{94,96}\text{Zr}$ systems at near-barrier energies

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Investigation of fusion reaction induced by weakly bound nuclei is one of important topics in recent years. Because weakly bound nuclei break up before entering the fusion barrier, the incident flux of the complete fusion reaction channel is reduced. Therefore, the complete fusion cross section occurs suppression phenomenon. In order to study the suppression factor of complete fusion cross section on medium mass target nuclei, the complete and incomplete fusion cross section of ${}^6\text{Li}+{}^{94,96}\text{Zr}$ have been measured by online gamma ray method at the HI-13 Tandem Accelerator of the China Institute of Atomic Energy (CIAE) in Beijing. It is found that the suppression factor of complete fusion of ${}^6\text{Li}+{}^{96}\text{Zr}$ is around 25% [1] which is smaller than that on heavy target nuclei (~40%). In ${}^6\text{Li}+{}^{94}\text{Zr}$, the angular distribution of gamma rays and angular momentum distribution of compound nuclei will be considered in the experimental results. A systematical behavior of suppression factor of complete fusion on Zr isotopes will be studied.

References:

[1]S. P. Hu et.al.,Phy. Rev. C 91 (2015) 044619.

Field of your work

Experiential nuclear physics

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