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The effect of the positive Q-value neutron transfers on near-barrier heavy-ion fusion

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In near-barrier fusion reactions with heavy-ions, the coupling effect of the positive Q-value neutron transfers (PQNT) is still a complex and unsolved problem. For studying this effect, the fusion excitation functions of the typical systems, such as 32S+90,94,96Zr, were measured by using an electrostatic deflector setup at CIAE. In this talk, the recent experimental results measured at CIAE will be reviewed, with special emphasis on the effect of the positive Q-value neutron stripping channels of 18O+50Cr,58Ni,74Ge. Additionally, considering the current inconsistent experimental data and theoretical analysis, the concept of residual enhancement (RE) that mainly aims for reducing the additional uncertainties was proposed to extract a reliable quantitative PQNT effect. More recent experimental studies for reaction mechanism will be also presented in this talk.

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Poster

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