

The role of tensor force in heavy-ion fusion dynamics

Monday, 19 June 2017 11:15 (30 minutes)

The tensor interaction is of current interests in nuclear physics. It could play a major role in structure, in particular away from stability, as well as in reaction. We systematically investigate the effect of tensor force on the fusion cross-section and Coulomb barrier in heavy-ion fusion dynamics within the symmetry-unrestricted three-dimensional time-dependent Hartree-Fock (TDHF) theory. The full version of Skyrme interaction, including the terms from the tensor force, is incorporated in our TDHF implementation. We found that the Coulomb barrier is systematically increased by the inclusion of tensor force for the spin-unsaturated systems, and has better agreement with the experiments than those without the tensor force included. A notable effect for the fusion cross-section is observed in the spin-unsaturated systems, and its agreement with experiments is significantly improved by the inclusion of tensor force. These effects of tensor force in fusion dynamics is attributed to the shift of low-lying vibration states with the inclusion of tensor force.

Primary author: Dr GUO, Lu (University of CAS)

Presenter: Dr GUO, Lu (University of CAS)