

Optimal collective coordinate in nuclear collective dynamics

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Collective reaction paths for fusion reactions are microscopically determined on the basis of the adiabatic self-consistent collective coordinate (ASCC) method. This path is maximally decoupled from other intrinsic degrees of freedom. The reaction paths turn out to deviate from those obtained with standard mean-field calculations with constraints on quadrupole and octupole moments. The potentials and inertial masses defined in the ASCC method are calculated along the reaction paths, which leads to the collective Hamiltonian used for calculation of the subbarrier fusion cross sections.

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