The dynamics of massive fusion near barrier by a microscopic dynamical model

X. G. Cao, G. Giardina

Shanghai Institute of Applied Physics, Chinese Academy of Sciences, Shanghai 201800, China

Istituto Nazionale di Fizica Nucleare, Sezione di Catania, and Dipartimento di Fisica dell'Universit`a di Messina, I-98166 Messina, Italy

The dynamics of massive fusion (^{48}Ca+^{144}Sm) is studied within the framework of the extension of quantum molecular dynamics (EQMD) model. The capture, deep inelastic scattering, quasifission, fast fission processes are detailed studied by all nucleons phase space. The corresponding cross sections are extracted and compared experimental data and dinuclear system model results. It is found that the width of wave packet in quantum molecular dynamics model evidently affects the dynamics and related cross section. The full microscopic treatment of massive fusion dynamics may shed light on some controversial problems such as the relative weight between quasifission and fast fission extracted from experimental fission-like fragmental yields.