Université Paris-Saclay
IJCLab
(Laboratoire de Physique des 2 Infinis Irène Joliot-Curie)
Bât. 100, F-91405 Orsay

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Beyond mean-field approach to nucleon exchange in heavy-ion collisions

Bulent Yilmaz
(Ankara University)

In the recently proposed stochastic mean-field (SMF) approach [1], the microscopic description of nuclear collision dynamics has been improved beyond the standard mean-field theory by incorporating quantal fluctuations in the initial state. In this talk, the motivations leading to the SMF approach as well as the application of SMF on schematic many-body quantum systems [2-4], and on description of nucleon exchange mechanism in collisions of 40Ca+90Zr, 90Zr+90Zr, 56Ni+56Ni, 40Ca+40Ca, and 48Ca+48Ca systems at low energies will be discussed [5-7].

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