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

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 ^{40}Ca+^{90}Zr, ^{90}Zr+^{90}Zr, ^{56}Ni+^{56}Ni, ^{40}Ca+^{40}Ca, and ^{48}Ca+^{48}Ca systems at low energies will be discussed [5-7].

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