SÉMINAIRE du GROUPE THÉORIE

INSTITUT DE PHYSIQUE NUCLÉAIRE
Groupe de Physique Théorique
Bât. 100, F-91406 ORSAY CEDEX
Tél (33)-(0)1-6915-7330 - Fax (33)-(0)1-6915-7748

Sakir Ayik

Tennessee Technological University

Multi-Nucleon Exchange in Stochastic Mean-Field Approach

In the first part of the talk, we provide a brief description of Stochastic Mean-Field Approach for describing heavy-ion dynamics at low energies [1]. The approach gives rise to a quantal diffusion mechanism for multi-nucleon exchange in the di-nuclear regime of heavy-ion collisions near barrier energies. Some examples of calculations of the primary fragment mass and charge distributions are presented in collisions of ^{40,48}Ca + ^{238}U and ^{238}U + ^{238}U systems [2]. We also discuss some aspects of the recent calculations performed for the spinodal instabilities in nuclear matter and for the spontaneous fission of ^{258}Fm by employing the Stochastic Mean-Field Approach [3].

[1] S. Ayik, Phys. Lett. B 658, 174 (2008)
[2] S. Ayik, B. Yilmaz & O. Yilmaz, Phys. Rev. C 92, 064615 (2015)
[3] Y. Tanimura, D. Lacroix and S. Ayik, Phys. Rev. Lett. 118, 152501 (2017)

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