

# Entrance channel effects and many-body correlations in nuclear dynamics

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Starting from a syntectic discussion of some of the main experimental evidences collected at LNS with the CHIMERA multi-detector [1,3] we illustrate the non-trivial connection between entrance channel effects observed in heavy-ion collisions in the Fermi energy domain and the main parameter describing the effective interaction [4]. This comparison will concern molecular dynamics calculations and mean-field kind calculations. The important role played by the many-body correlations able to produce in a natural way clusters and the the value of the parameter obtained in the limit of very large systems is discussed. Particular emphasis will be given to the iso-vectorial interaction and the related symmetry energy parameters which can strongly affect the above mentioned experimental evidences.

[1] F.Amorini et al, Phys. Rev. Lett. **102**, 112701(2009).

[2]M. Papa et al, Phys. Rev. C **75**, 054616 (2007), and references therein.

[3]P. Russotto et al, Phys. Rev. C **81**, 064605 (2010), and references therein

[4] M.Papa, Phys. Rev. C **87** 014001(2013) and references therein;