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Extracting the nuclear equation-of-state from heavy ion collisions with transport simulations

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Recent results connected to nuclear collision dynamics, from Fermi up to intermediate energies, will be reviewed.

Dissipative heavy ion reactions offer the unique opportunity to probe the complex nuclear many-body dynamics and to explore, in laboratory experiments, transient states of nuclear matter under several conditions of density, temperature and charge asymmetry.

Transport models are an essential tool to undertake the latter investigations and make a connection between the nuclear effective interaction and sensitive observables of experimental interest.

In this talk, I mainly focus on the description of a selection of reaction mechanisms, also considering comparisons of predictions of different approaches. This analysis can help understanding the impact of the interplay between mean-field and correlation effects, as well as of in-medium effects, on reaction observables, which is an essential point for extracting information on the features of the nuclear effective interaction and the nuclear Equation of State.

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