The Theory Room

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Aula Azzurra
LNS - INFN
Ore 15:00

Wang Rui

Microscopic treatment of in-medium effects in intermediate-energy heavy-ion collisions

Exploring the nuclear equation of state using intermediate-energy heavy-ion collisions critically depends on an accurate understanding of in-medium effects. Traditional kinetic approaches have relied on phenomenological parameterizations of in-medium cross sections fitted to nuclear stopping, limiting their predictive power. In this talk, I will present our effort to incorporate a microscopic Green's function formalism, which is capable of calculating the in-medium transition matrix of elastic nucleon-nucleon scatterings, directly into a kinetic framework. This leads to a parameter-free description of in-medium effects in non-equilibrium nuclear processes, with which nuclear stopping data in intermediate-energy heavy-ion collisions can be reproduced. With the present microscopic treatment of in-medium effects, the link between heavy-ion observables and the nuclear equation of state is strengthened, establishing a firm basis for constraining it through experimental measurements.r

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