



Contribution ID: 1

Type: **Invited**

Equilibration dynamics in nuclear reactions

Monday, 13 May 2019 17:00 (30 minutes)

Low-energy heavy-ion reactions provide us a rich laboratory to study the equilibration dynamics of strongly interacting many-body systems. In particular, these reactions probe an intriguing interplay between the microscopic single-particle dynamics and collective motion at time scales too short for complete equilibration. In this presentation, we discuss recent microscopic studies of equilibration dynamics in deep-inelastic, quasi-fission, and fusion reactions. In this context we will discuss the equilibration dynamics and time-scales for various quantities that are connected to the experimentally observable entities. These include the study of mass, isospin, and total kinetic energy (TKE) equilibration time-scales. In most of these studies one is essentially dealing with the transport phenomena of isospin asymmetric systems [1,2]. These investigations provide us the ingredients to model such phenomena and help answer important questions about the nuclear Equation of State (EOS) and its evolution as a function of neutron-to-proton N/Z ratio [3].

*This work has been supported by the U.S. DOE under Grant No. DE SC0013847 with Vanderbilt University and by the Australian Research Council Grant No. DP160101254.

[1] C. Simenel and A. S. Umar, Prog. Part. Nucl. Phys. 103, 19 (2018).

[2] K. Godbey, A.S. Umar, and C. Simenel, Phys. Rev. C 95, 011601(R) (2017).

[3] A.S. Umar, C. Simenel, and W. Ye, Phys. Rev. C 96, 024625 (2017).

Primary author: Prof. UMAR, Sait (Vanderbilt University)

Co-authors: Prof. SIMENEL, Cedric (Australian National University); Dr GODBEY, Kyle (Vanderbilt University)

Presenter: Prof. UMAR, Sait (Vanderbilt University)

Session Classification: Session IV