

## Heavy-ion fusion and fission study at the low energy region

*Tuesday, 17 October 2023 12:00 (30 minutes)*

Decades of effort in developing accelerator facilities, detector developments, and electronics have helped us better understand the heavy-ion reaction dynamics, particularly in the low-energy region. Various aspects of elastic and inelastic scattering, fusion, transfer, and influence of inelastic couplings in the scattering and fusion have been investigated in nucleus-nucleus interactions. Studies on breakup-fusion processes of the weakly bound or cluster-structured projectiles ( $^6\text{Li}$ ,  $^7\text{Li}$ ,  $^9\text{Be}$ , etc.) over a broad target mass range are also remarkable to shed light on the reaction dynamics and their dependence on the entrance channel parameters. However, it is worth mentioning that fusion-evaporation dominates in lighter systems, while evaporation competes with the fission process for heavy compound nuclear mass. Thus, post-fission observables, such as charge and mass yield distributions, are fascinating and are being extensively studied in low and intermediate energies. Besides basic science, the production of exotic neutron-deficient radionuclides is possible through heavy-ion reactions. The talk will discuss our efforts in exploring heavy-ion reaction dynamics and the proposition of radionuclides for the applications. It will also highlight our joint effort (INDIA-JINR) on exploring the fission dynamics of sub-lead nuclei, particularly for the Hg isotopes.

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