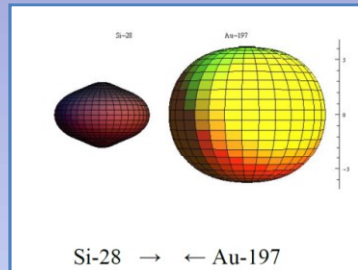
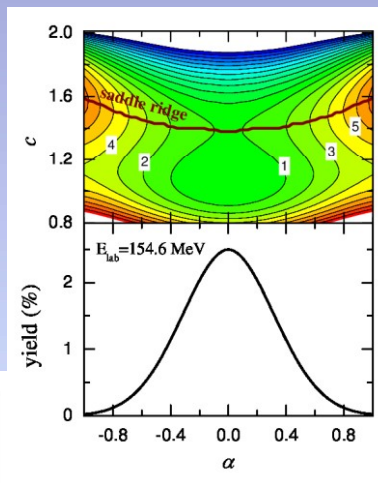


Reaction dynamics and shell effects in fragment mass and N,Z distributions in heavy ion induced fission and quasifission

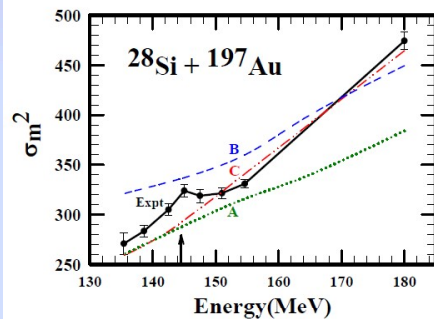
Experiments are done using two complementary techniques (1) Kinematic coincidence using a pair of large area MWPCs, (2) Prompt gamma spectrometry using INGA HpGe clover setup



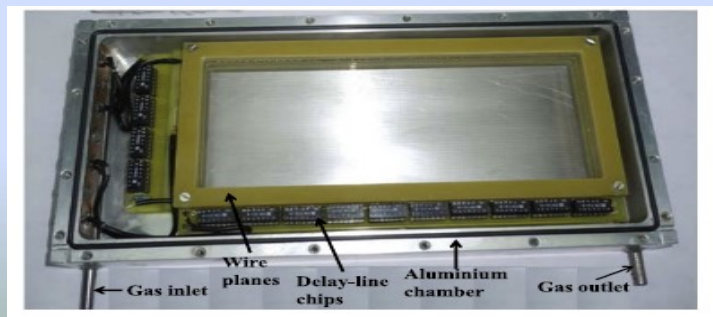
Relative sizes and shapes of projectile and target nuclei



Calculated potential energy surface of the compound nucleus, and the fragment mass distribution including dynamics



Experimentally measured mass variance and comparison with theoretical estimates [3]



Open view of one of the MWPC developed for technique (1) described above

Heavy ion reactions are the only method for formation of very heavy to super heavy nuclei in laboratory. The formation probabilities are heavily influenced by the interactions of the projectile and target nuclei as they start overlapping. The relatively early reseparation of the reaction partners to projectile-like and target-like nuclei is known as quasifission and this process is the main limiting factor in the formation. The exact conditions under which quasifissions take place are investigated in the selected mass region in these studies.

Selected Publications:

1. L. S. Danu et al., Phys. Rev. C 81, 014311 (2010)
2. S. Mukhopadhyay et al., Phys. Rev. C 85, 064321 (2012)
3. N. Kumar et al., Phys. Rev. C 99, 041602(R) (2019)