

# Dynamical approach to heavy ion-induced fission

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Deep inelastic collisions (DICs) can compete strongly with fusion in collisions of heavy nuclei. However, standard coupled-channels calculations do not take DIC process into account. As a result, calculations have been shown to overestimate the fusion cross-section and thus lead to a discrepancy between experimental data and theoretical calculations, particularly at energies above the fusion barrier [1]. To address this discrepancy, a dynamical reactions model is being developed at the Australian National University (ANU). To test this model, we conducted a series of experiments on heavy ion reactions using the ANU 14UD tandem accelerator and the CUBE binary fission spectrometer to examine the competition between transfer and fusion. In particular, fusion-fission and transfer-fission yields have been extracted for the  $^{34}\text{S}+^{232}\text{Th}$  and  $^{40}\text{Ca}+^{232}\text{Th}$  systems. Results of this work will be presented, and potential implications that the role energy dissipation plays in heavy ion reactions will be discussed.

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[1] J. O. Newton *et. al.* *Phys. Rev C* **70**, 024605 (2004).