# EXPLORING THE FISSION DYNAMICS OF $^{210}$Rn NUCLEUS VIA ALPHA MULTIPLICITY MEASUREMENT

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In the past, extensive theoretical and experimental efforts have been made to understand the various aspects of the heavy ion induced fusion-fission reactions. Extraction of fission time scales using different probes is of central importance for understanding the dynamics of fusion-fission process. It has been observed from the earlier studies that the fission decay of hot nuclei is hindered. Alpha particles emission in $^{210}$Rn compound nucleus (CN) is used as a probe to understand fission process.

The experiment was performed in GPSC at IUAC, New Delhi. $^{16}O+^{194}Pt$ reaction at $E_{lab}$=98.4MeV was used to form $^{210}$Rn CN. Fission fragments were detected using multi wire proportional counters (MWPCs) kept at $45^0$ and $112^0$ w.r.t beam. Charged particles (protons and alphas) were detected using 16 CsI(Tl) detectors kept at various angles. In charged particles, coulomb barrier and deformation dependent particle binding energy plays an important role due to which emission of charged particles is suppressed. Moreover, they can provide needful information on the dynamical aspects of fusion-fission process.

2-D spectrum of CsI(Tl) detector is shown in Fig 1 and obtained using Ballistic Deficit technique. α- particles were further gated with anode of MWPC to get the spectrum of α in coincidence with fission fragments and moving source fitted plot for various souces during fission process is shown in fig 2.

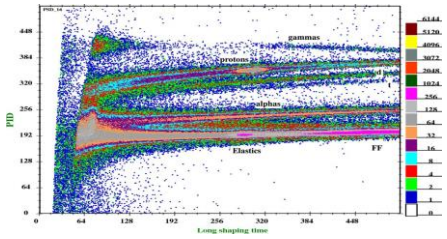


Fig 1-Particle Identification spectrum from CsI(Tl)

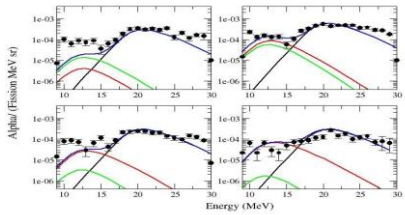


Fig 2- Moving source Fitting for charged particle emission from compound and fragments sources

Results thus obtained are compared with the theoretical code JOANNE2 and shows that the deformation dependent particle binding energy plays an important role in the emission of the outcoming particle. Detailed results will be discussed during the conference.