Abstract Submitted for the APR21 Meeting of The American Physical Society

Probing the fission

 $\mathbf{dynamics} \ \ \mathbf{of} \ \ ^{\mathbf{192,202}} Pocompound nucleius in gneutron multiplicity measurements^{1}$ RUCHI MAHAJAN, National Superconducting Cyclotron Laboratory, MSU, NAND COLLABORATION² — The dominant reaction mechanism for the nuclear reactions induced between heavy ions is fusion-fission (FF) as well as non-equilibrium process called quasi-fission (QF). In order to disentangle the FF and QF processes, we have measured the neutron multiplicity for ${}^{48}\text{Ti} + {}^{144,154}\text{Sm} \rightarrow {}^{192,202}\text{Po}$ compound nuclei. For the system $^{18}O + ^{192}Os \rightarrow ^{210}Po$, experimental data exists for neutron multiplicity. For systems with heavier projectile, sizable contribution from QF process is expected. We have performed a consistent analysis of Po (N=108 to 126) nuclei to study the role of shell effects. This experiment was performed using National Array of Neutron Detectors (NAND) facility at IUAC, New Delhi. The pre- and post-scission components of neutron multiplicities are obtained from the measured neutron energy spectra by using a multiple source least-square fitting procedure, using the Watt expression. Statistical model calculations were performed for these systems using Bohr Wheeler and Kramer's formalism [1]. [1] R. Mahajan et al., Phy. Rev. C 98, 034601 (2018).

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