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Study of fusion-fission dynamics in $^{19}\text{F}+^{238}\text{U}$ reaction

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{\large \bf Study of fusion-fission dynamics in  $^{19}\text{F}+^{238}\text{U}$  reaction}
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\underline
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Over the years, a large number of experiments have been performed to study the dynamics of fusion-fission

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mechanism in heavy ion induced reactions. These studies are important for better understanding of the reaction dynamics involved in the formation of super heavy elements in laboratory. Apart from pure fusion-fission, the existence of pre-equilibrium fission (PEQ) and quasi-fission (QF) add further complexity to the reaction dynamics. They are found to be the competing reaction channels for light ion induced reactions with actinide targets. Though many studies have been performed in this mass region, there are still inconsistency in the results of many of these reactions. For example, the angular anisotropies of fission fragments measured in reactions $^{19}\text{F}, ^{16}\text{O}, ^{12}\text{C} + ^{232}\text{Th}, ^{238}\text{U}$ [1,2,3] have been found inconsistent with the statistical saddle point model (SSPM) predictions. It has been reported that PEQ fission mechanism, i.e., departure from K equilibration before fission events might be responsible for these anisotropies. However for reactions of $^{19}\text{F}, ^{16}\text{O}, ^{12}\text{C}$ on ^{232}Th [4], the mass distribution of fragments showed evidence of QF, i.e., no mass equilibration before fission. In the recent work, presence of QF is evident in the reaction $^{18}\text{O} + ^{232}\text{Th}$ as compared to the $^{12}\text{C} + ^{238}\text{U}$ system [5]. In the present work, we performed the mass distribution of fission fragments in the reaction $^{19}\text{F} + ^{238}\text{U}$ where large anisotropy has been reported in angular distribution.

Experiment was performed in the general purpose scattering chamber(GPSC) facility at Inter University Accelerator Centre, New Delhi, India.

Mass variance of fission fragments for $^{19}\text{F} + ^{238}\text{U}$ reaction has been measured and reported in our recent work.

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[1] J.C. Mein *et al.*, Phys. Rev. C **55**, R995 (1997).\newline

[2] J. P. Lestone *et al.*, Phys. Rev. C **56**, R2907(1997).\newline

[3] V. S. Ramamurthy *et al.*, Phys. Rev. Lett. **65**, 25(1990).\newline

[4] T.K. Ghosh *et al.*, Physics Letters B **627** (2005).\newline

[5] C.Yadav *et al.*, Phys. Rev. C **86**, 034606 (2012).\newline

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