

# PLPAC meeting 2024-1

Contribution ID : 21

## Fission fragment mass and TKE distribution of $^{194}\text{Hg}$ [ $^{19}\text{F} + ^{175}\text{Lu}$ ]

Monday 22 Apr 2024 at 15:15 (00h15')

**PI info :**

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**local collaborator info :**

NA

**Collaborators Name :**

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**Motivation :**

In a decade since the discovery of asymmetric split in  $\beta$ -delayed fission of  $^{180}\text{Tl}$  the fission of the preactinides has witnessed considerable development both theoretically as well as experimentally. We had an ongoing experimental program to systematically explore the new kind of asymmetric fission observed in the preactinide region. In this regard we intend to measure fission fragment mass and TKE distribution of  $^{194}\text{Hg}$  populated in  $^{19}\text{F} + ^{175}\text{Lu}$  reaction. As more studies are required to understand the role of shell effects on the fission process in preactinides this measurement will be useful in constraining the theoretical models.

**Beam time requirement in shifts :**

18

**Beam :**

$^{19}\text{F}$  (fully stripped) pulsed

**Beam Energy :**

85 - 105

**Beam Current :**

2 - 10

**Beam Port :**

Hall 1, 30 D

**Buncher Required :**

yes

**Target / Sample Details :**

$^{175}\text{Lu}$

**Whether the experiment is part of PhD work ? :**

No

**Whether the experiment is part of Post-Doc work ? :**

No

**information on the past beamtime at PLF :**

$^{34}\text{S}+^{159}\text{Tb}\rightarrow^{193}\text{Tl}$  (23.04.2022 to 26.04.2022)

$^{28}\text{Si}+^{165}\text{Ho}\rightarrow^{193}\text{Tl}$  (27.04.2022 to 30.04.2022)

**Publication information related to prior work at the PLF :**

1. "Observation of asymmetric fission in  $^{204}\text{Pb}$  at low excitation energies", Vineet Kumar, K. Mahata, Sangeeta Dhuri, A. Shrivastava, K. Ramachandran et. al. Phys. Rev. C 109, 014613 (2024).
2. "Quest for understanding neutron emission in nuclear fission: The case of  $^{210}\text{Po}$ ", Sangeeta Dhuri, K. Mahata, K. Ramachandran, P. C. Rout, A. Shrivastava, et. al. Phys. Rev. C 108, 054609 (2023).
3. "Measurement of mass and total kinetic energy distributions for the  $^{12}\text{C}+^{175}\text{Lu}$  system", Sangeeta Dhuri, K. Mahata, A. Shrivastava, K. Ramachandran, S. K. Pandit et. al. Phys. Rev. C 106, 014616 (2022).
4. "Evidence for the general dominance of proton shells in low-energy fission", K. Mahata, C. Schmitt, S. Gupta, A. Shrivastava, G. Scamps, and K.-H. Schmidt, Phys. Lett. B 825, 136859 (2022).
5. "Fission fragment mass distribution of  $^{187}\text{Ir}$ ", Sangeeta Dhuri, K. Mahata, A. Shrivastava, K. Ramachandran, S. K. Pandit et. al. J. Phys. Conf. Ser. 2586 012075, (2023).

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**Session classification :** --not yet classified--

**Track classification :** --not yet classified--

**Type :** --not specified--