



A Facility for Research in Experimental Nuclear Astrophysics (FRENA)

*A. Mukherjee and FRENA Group,
Saha Institute of Nuclear Physics,
Kolkata, INDIA*

A 3 MV Tandem high current accelerator

Terminal voltage: 0.2 to 3MV
TV Resolution – $(\Delta E/E)=3 \times 10^{-5}$
(100 V at 3 MV, i.e. $E_{\text{step}} < 1 \text{ keV}$)
TV stability: $\pm 300 \text{ V}$ (GVM)
 $\pm 80 \text{ V}$ (slit stabilization)
TV ripple: 30 Vpp



**Typical Beam Currents at 3 MV
after quadrupole triplet lens:**

H^+ : 350 μA
 He^{2+} : 50 - 100 μA
Heavier Ions: 5 – 50 μA

Pulsed beam line for light ions

Pulse Frequency Range:

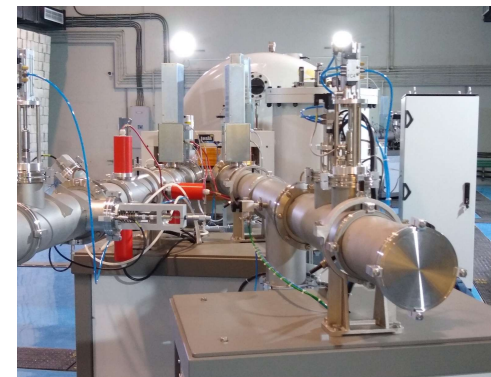
125 kHz – 4 MHz

H^+ : 12.5 epC at TV= 3 MV

1.5 epC at TV= 0.2 MV

He^{2+} : 6.5 epC at TV= 3 MV

1.5 epC at TV =0.2 MV



Initial experiments planned:

- $^{14}\text{N}(p,\gamma)$
- $^{12}\text{C}+^{12}\text{C}$
- $^{12}\text{C}(p,\gamma)$

❖ **Gas-target facility being developed**

Calibration runs to be taken soon