

Diamond Foil Test at 750 keV

- Brookhaven measurements demonstrated carbon foil failure modes so there is no rush to repeat this at this time.
- Measurement Objectives:
 - An extended diamond foil measurement >400 hours (14 Days)
 - Comparison to 1 carbon foil identify a failure
- Parameters based on 3 mm aperture and 750 keV beam
 - To match 1 GeV, Brookhaven used 2 mA of H⁻
 - Mikhail's calculations for matching 8 GeV
 - 90 turns at 26 mA can be matched at 8.5 mA (4.4 passes through the foil)
 - 270 turns at 9 mA and can be matched at 15.7 mA (15.9 passes through the foil)
 - Although the current ramps up slower the average number of hits on the foil goes up!
 - Fastest Injection frequency: MI cycles to 40 GeV at 2.0 Hz
 - Currently we can operate at 15, 7.5, 3.75, and 1.87 Hz
 - To best match the 2 Hz cycle time we will make our tests at 1.87 Hz
 - Measurement in 750 line assuming a uniform current density suggest that we can get 5.4 mA into a 3 mm diameter aperture
 - Assuming we have something closer to a Gaussian beam, and that we get the 3 mm carbon mask in the center of the beam probable means we will get a higher current through the aperture