

Plans for SNS Front End Beam Halo Scraping

- 1) Baseline Plan
 - a. LEBT Aperture limitation
 - b. MEBT scraper at chopper target, two adjustable blades in addition to the adjustable target
 - c. MEBT additional 3 quad power supplies for alternative optics (possibly a smoother beta function across the anti-chopper, and then chopper)
- 2) Back-Up Plan
 - a. Second MEBT scraper in a box, which can be swapped with the anti-chopper box; the scraper consists of four adjustable blades
 - b. Retro-fit the DTL first tube with fixed scraper as needed

For end-to-end study:

- 1) Use measured LEBT distribution. This distribution needs to be finely matched to the (unknown) optimum RFQ input conditions; simple rms Twiss parameters are not good enough for this purpose, and there is very little chance that the "best" LEBT distribution we have measured actually would be this optimal input distribution. The best measured distribution should be slightly sheared (mathematically) to find the optimum orientation.
- 2) Apply LEBT scraping
- 3) Apply MEBT chopper-target scraping
- 4) Simulate two cases:
 - a. Nominal optics
 - b. Modified MEBT optics with smoother beta function across anti-chopper