Run Program

Slit scan methodic studies : projected emittance & phase space

- Experiment:
  - Compare results of Fast scan with SlitScanner that has option to adjust number of pulses at every slit position → Phase space core-halo evaluation
- Parameter:
  - Laser : MBI-Gaussian 6-7ps FWHM with BSA = 1.4(1000pC) ; 1.2(500pC) ; 1(250pC)
  - RF Gun : SP = 56 → 6.3 MeV/c
  - Booster : SP = 16 → 19 MeV/c
- Procedure:

1. Set BSA, record VC2 (laser BBA done)
2. LEDA scan PZ(MMMG)~6.3MeV/c
3. Emission curve, Q(MMMG)
4. HEDA scan--> MMMG
5. Beam trajectory --> nominal, record BPMs
6. Gun quads for a round beam for ~Imain4focus@HIGH1.Scr1+2A → GunQuadSymmtrizer tool
7. Solenoid scan (EMSY1-HIGH1.Scr4) using fastscan in the nominal mode --> find best Imain*

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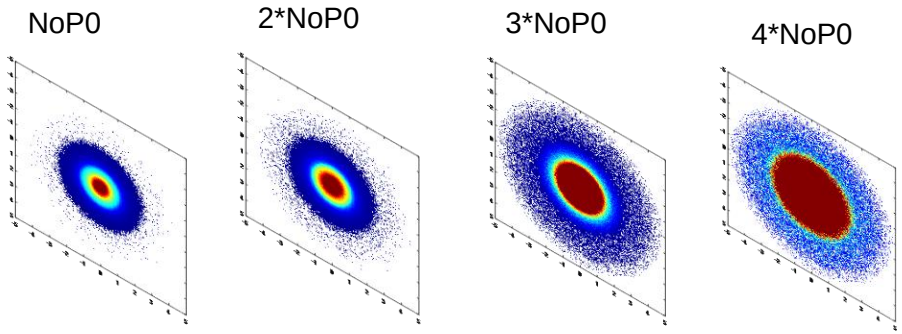
8. Emittance measurements (EMSY1-HIGH1.Scr4) for Imain* using 50um slits
   - 8.1) 1x3 statistics with fastscan --> (NoP0 = x → saturate only central beamlet) (actuator speed -->~50-60 slit positions)
   - 8.2) 1x3 statistics with fastscan for increasing NoP=2*NoP0; 3*NoP0; 4*NoP0, (saturating core)
   - 8.3) SlitScanner (stop-n-go) with 50um step and using same NoP settings as used in p.8.1-8.2
   - 8.4) SlitScanner with 50um step with interactive NoP adjustment for each slit position
9. Repeat step 8 with 10um slit
10. Repeat for all charges
11. Additional Ideas:
    - 11.1 1x3 statistics with fastscan after changing MOI position by +/-1.2 mm by steering the beam after H1Scr1
    - 11.2 1x3 statistics with fastscan for the best emittance point found in 11.1 → keep corresponding MOI position fix
      → introduce a zig zag trajectory after H1Scr1 (record steerers)



NOTE: SlitScanner Tool

EMSY1X: \\win.desy.de\group\zn\4groups\zn_pitz\NFS\Measure\scripts\Development\SlitScanner_variableNoP

EMSY1Y: \\win.desy.de\group\zn\4groups\zn_pitz\NFS\Measure\scripts\Development\SlitScanner_variableNoP_Yscan