Hands On Training

Hands on Training of ASTRA (ISBA19)

T.1. ASTRA input file which contains RF Gun cavity, Solenoid, and TW linac, with parameters is provided. Please execute it. Please track with and without space charge effect.

In the following tasks, please keep with space charge on.

T.2. Observe bunch length, energy, energy spread, transverse beam size, emittance as a function of RF phase, and solenoid field, at the exit of the gun.

T.3. Try to minimize energy spread, and emittance at the exit of RF gun by changing RF phase and solenoid field strength.

T.4. Try to minimize transverse emittance at the end of the linac, which satisfies following conditions:

- initial laser beam profile: Flat top, pulse length 5.8 ps (FWHM) with 0.7 ps rise/fall time
- laser spot size: 0.35 mm (rms), radial uniform
- thermal emittance: 0.4 mm.mrad
- No of 3 m long S-band travelling wave linac: 1
- energy at the end of the linac: ~ 70 MeV