Small Beam Optics Update

February 13th 2024
Laura and Aveen

To make a long story short…

- Still seeing differences in the angular spread between G4 and Transoptr
- Little unclear how exactly to resolve this
- A few ideas though

Current status

- Before the holidays, found a small bug in the scattering angle that was being passed to Transoptr
- Fixed that but still seeing differences
- Spent some time last week trying to bring the two into agreement with some cuts but no luck

No magnets and no beam spot

- Turn off all the magnets and make the beam spot 0 (or as close as possible)
- Taking the full RMS with no cuts in G4 (N events = 1M):
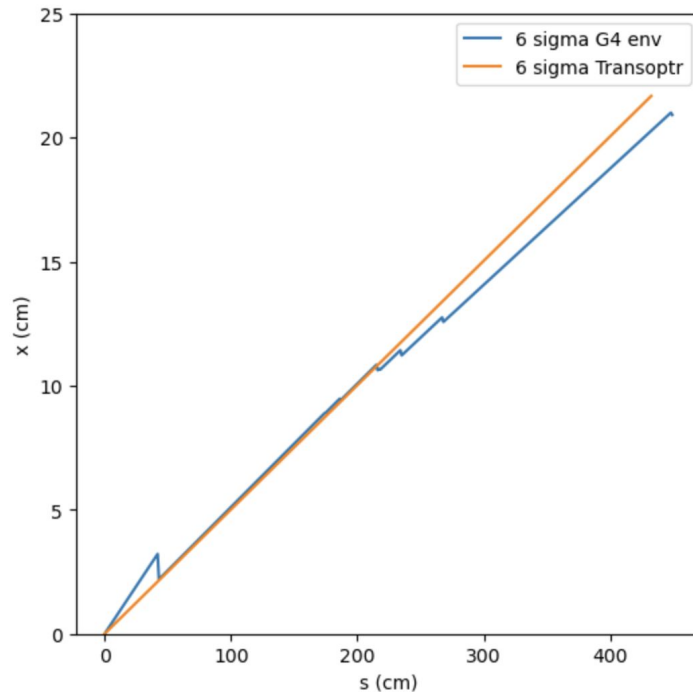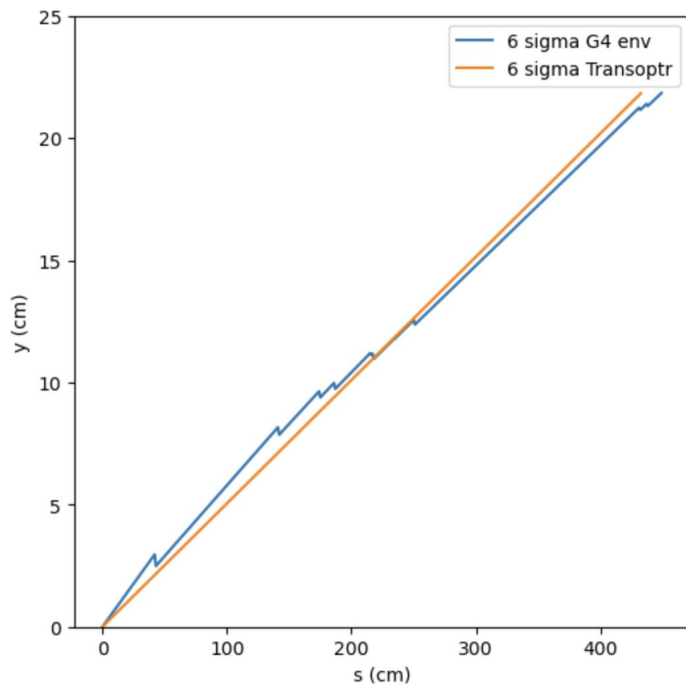
No magnets and no beam spot

- Turn off all the magnets and make the beam spot 0 (or as close as possible)
- Impose a cut that removes particles if 1.0 m down the beamline they are outside a radius of 50 cm (removes 61 out of a little over 1M particles):
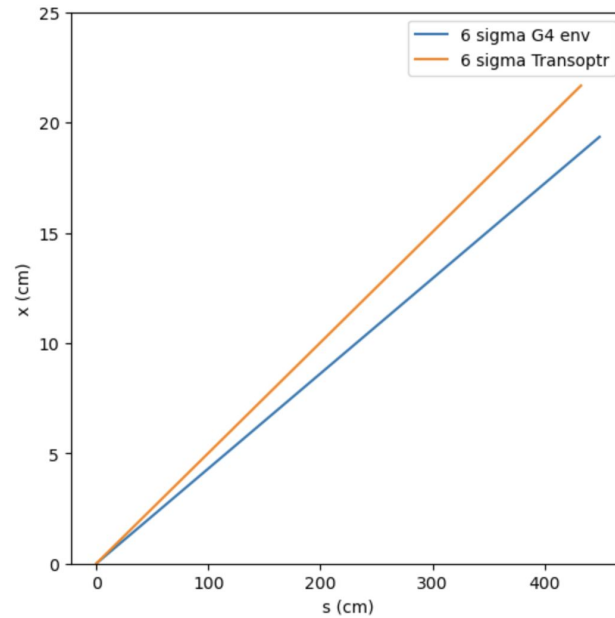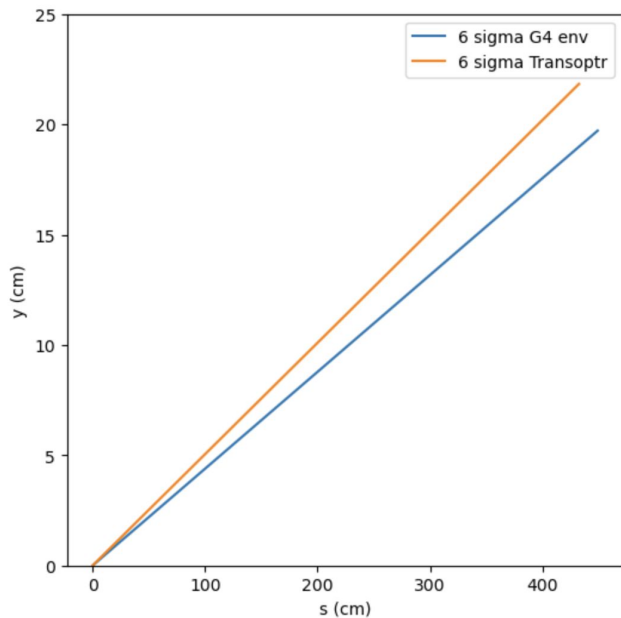
Next steps

- Trying the scattering angle with that cut imposed in Transoptr
- Once we get agreement with this will add beam spot back in
- Then see if magnets agree