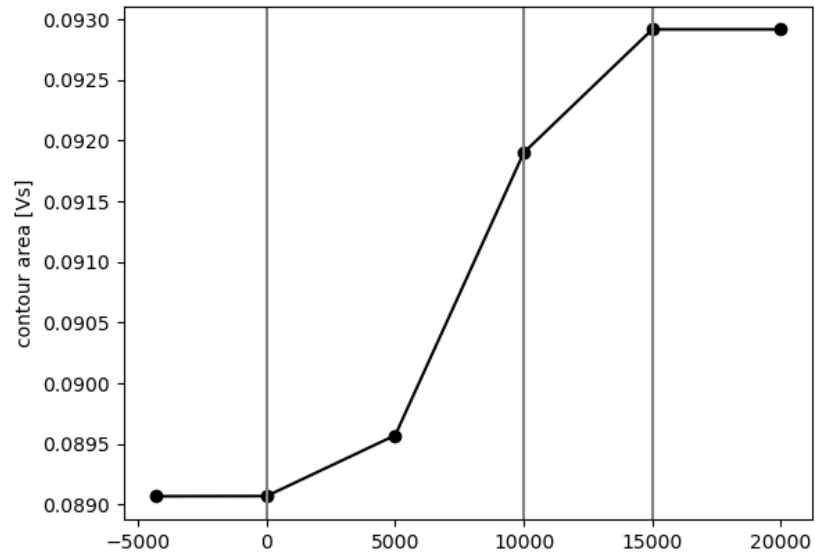
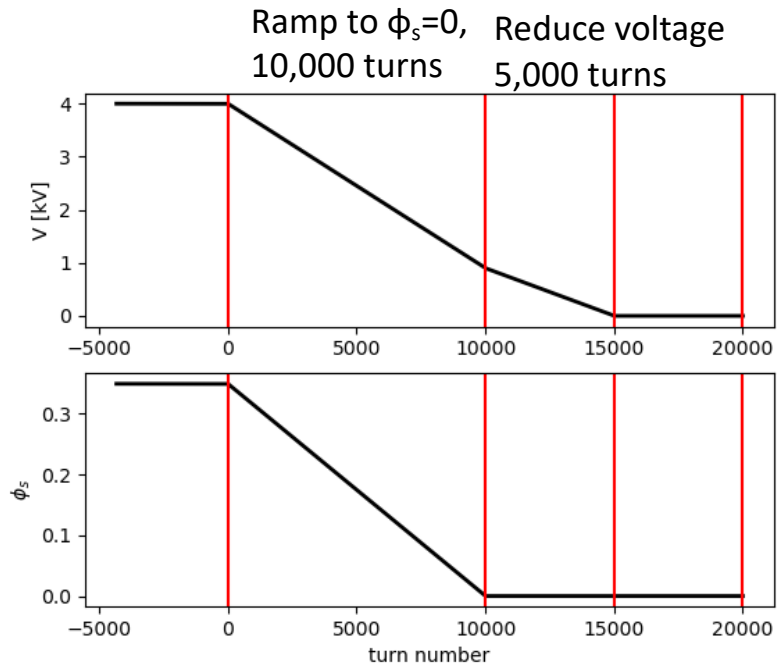


Beam stacking: RF program

David Kelliher, 1/12/2022

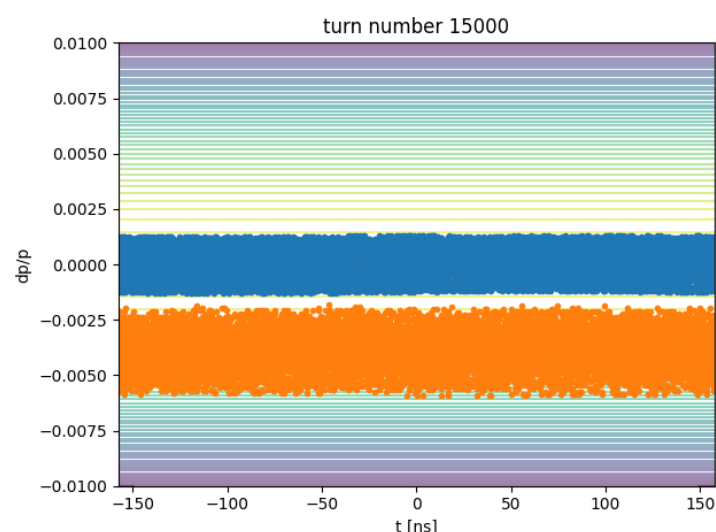
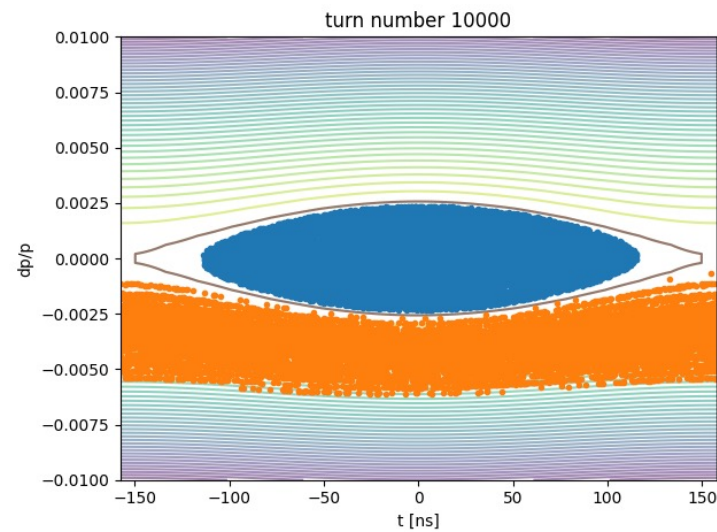
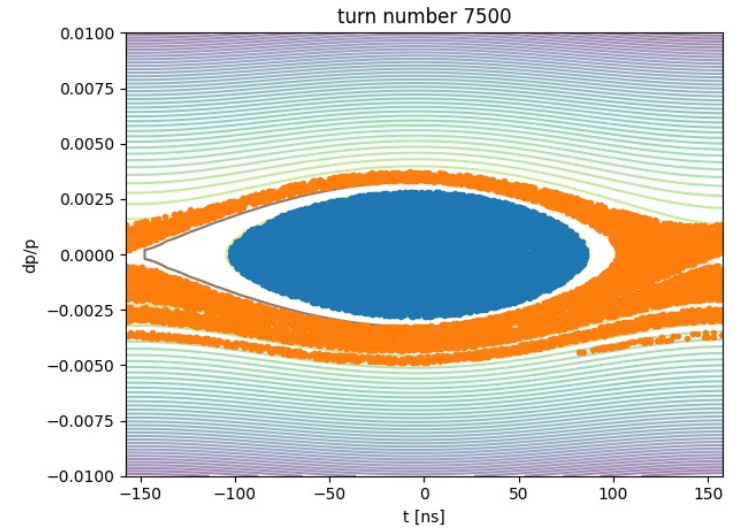
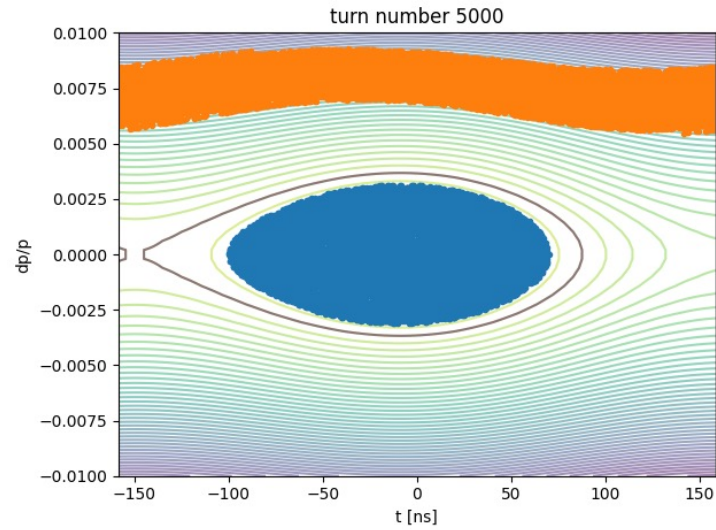
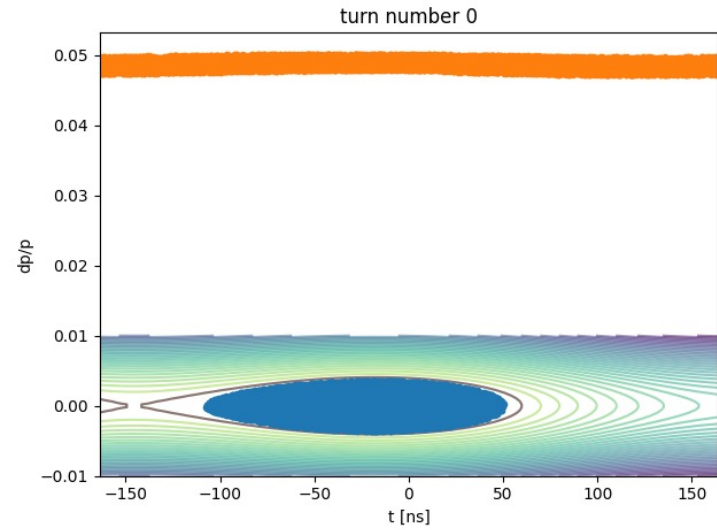
Proposed stacking program



5% emittance increase

- Horizontal axis origin corresponds to ~ 30 k turns from start of acceleration when beam reaches 52.9 MeV
- Once beam reaches stationary bucket, 10k turns later, energy is 58MeV.
- Emittance calculation based on tracking a uniform distribution that occupies 75% of moving bucket before ϕ_s ramp. 20,000 macroparticles.

Stacking the second bunch



Final energy spread coasting

Beam 1: 296 keV

Beam 2: 458 keV

Total spread: 814keV

Assuming 4kV capture voltage and ideal capture, the maximum energy spread allowed is $\sim 780\text{keV}$