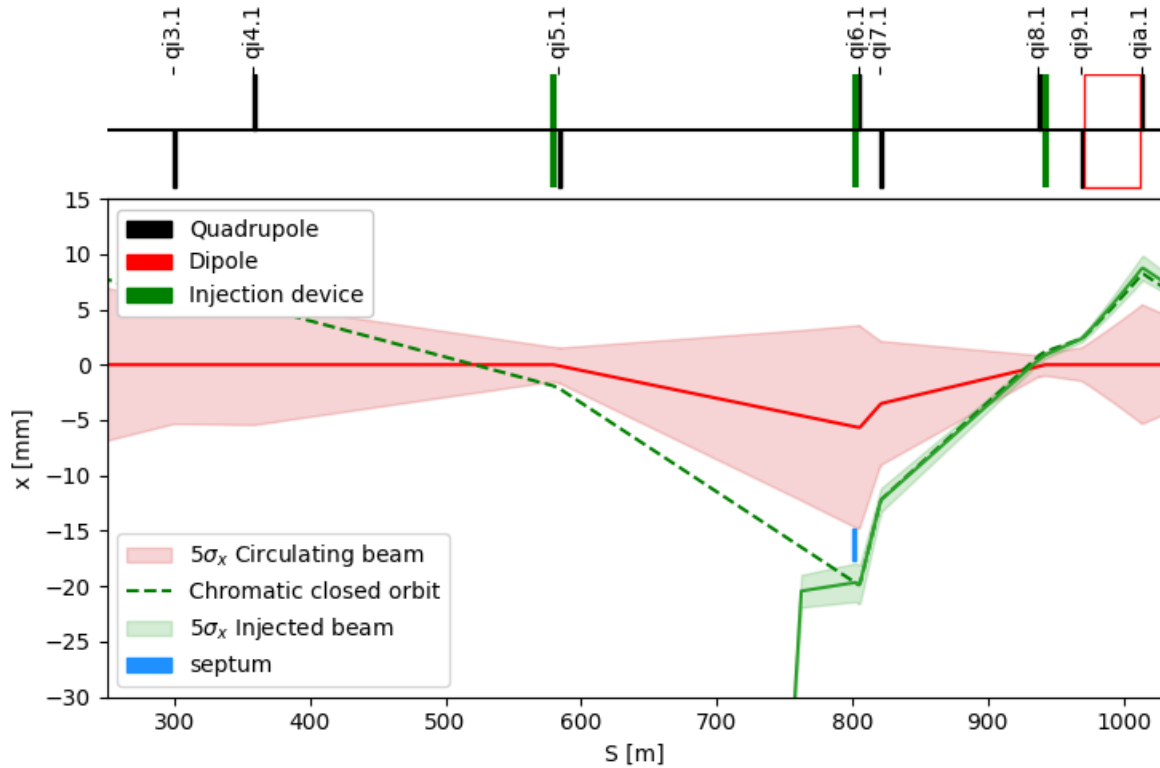




# Vertical emittance blow-up at new injection point

Sen Yue (SY-ABT-BTP)

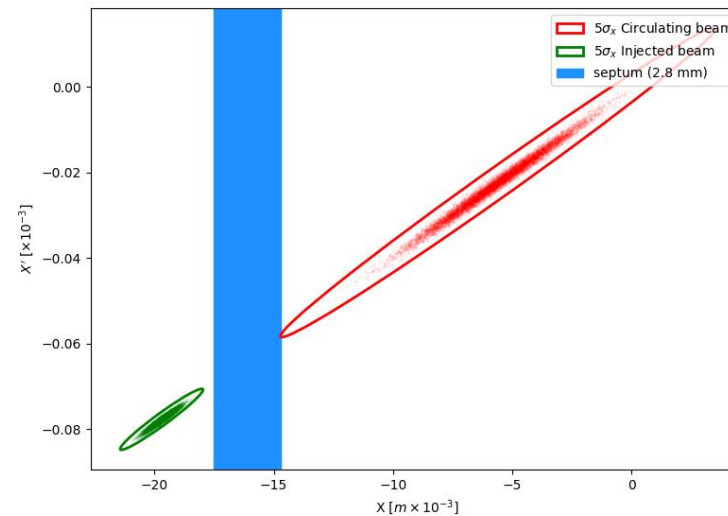
# On-axis injection with new injection position



Energy offset: 0.95 %

Lattice version: [V24.4\\_GHC](#)

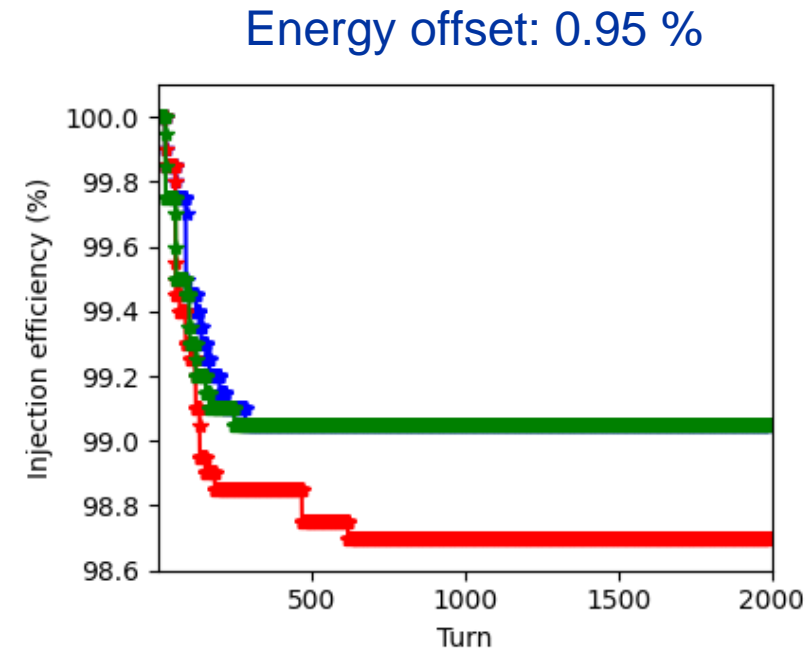
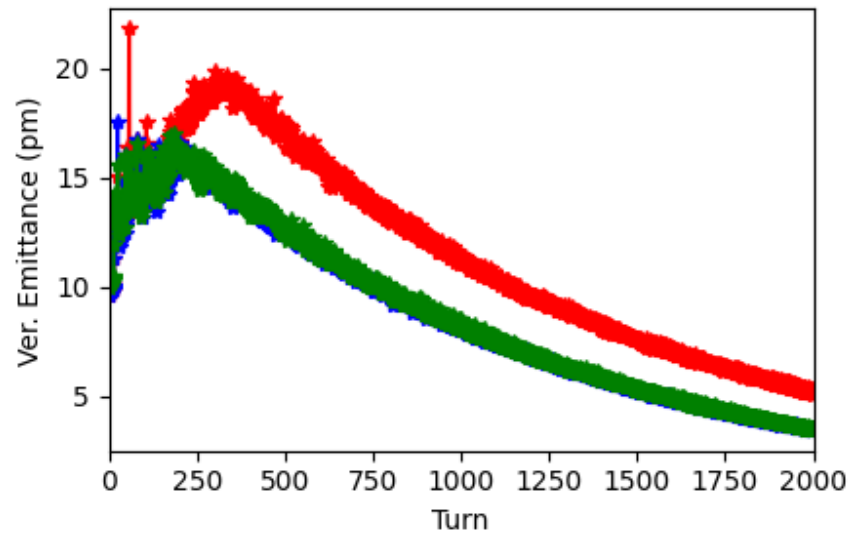
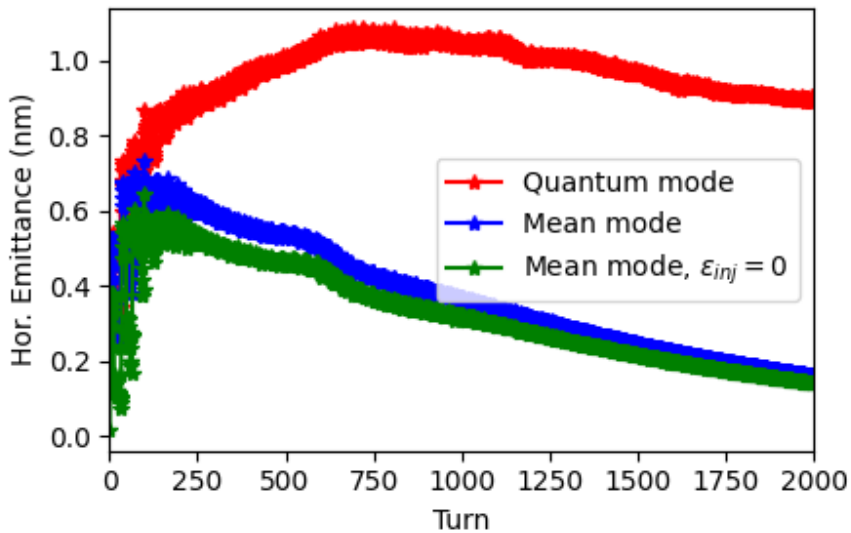
- Thin septum is 2 m upstream of qi6.1
- Beam parameter changes
  - $\beta_x = 988 \text{ m}$ ,  $D_x = 1.48 \text{ m}$
  - $D_{px} = -0.0058$ ,  $\alpha_x = -3.94$
- Septum thickness: 2.8 mm



Real phase space at injection point

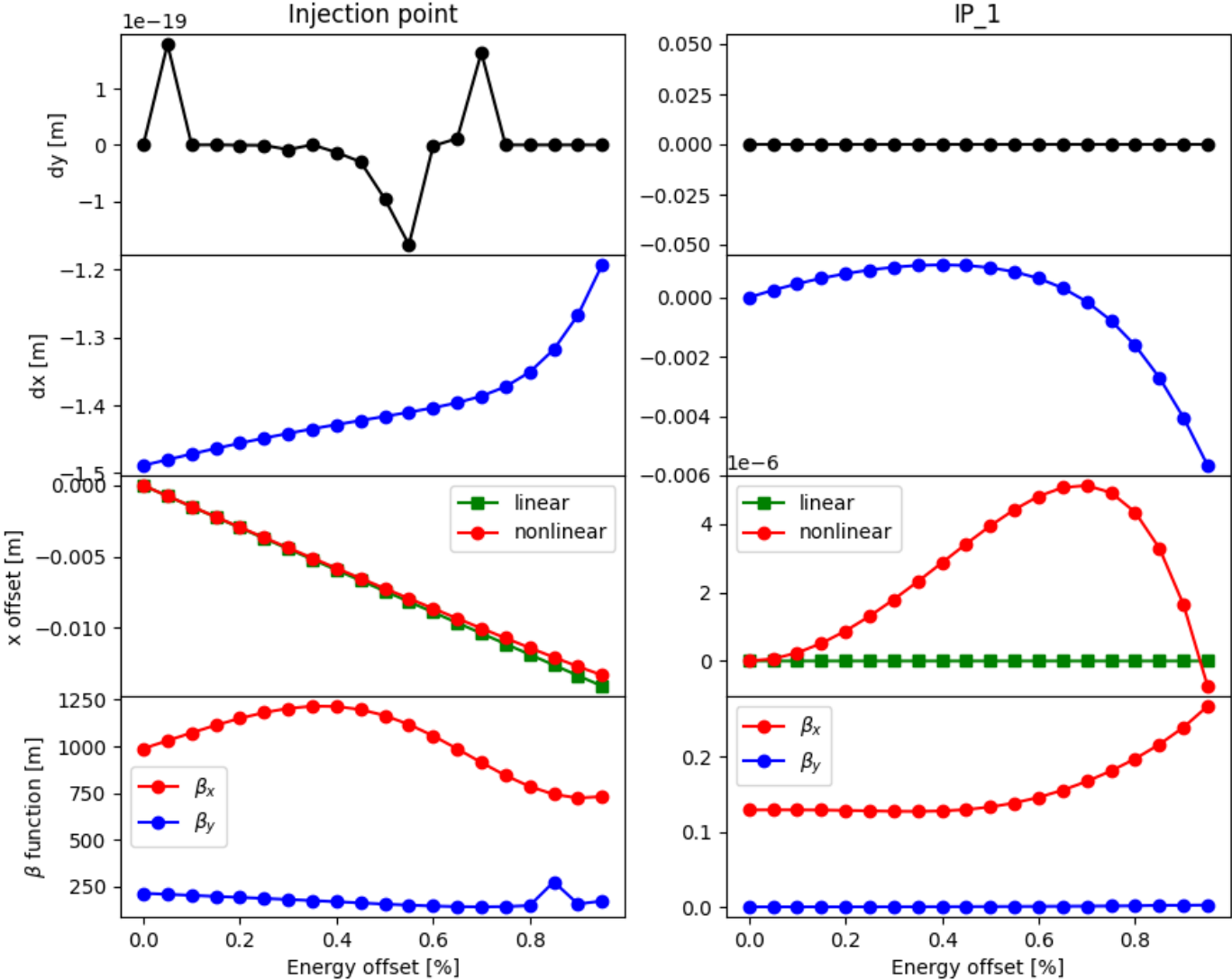
# Tracking results

- Only consider SR effect, injection position is 2 m upstream of qi6.1
- The H&V emittance blow up in mean SR mode is smaller than that in quantum mode
  - **Reduce the injected beam emittance** can't mitigate the emittance blow up
- On-axis injection has good injection efficiency
  - **Little influence of location change** on injection efficiency



# Off momentum optics

Nonlinear effect at injection point and interaction point looks fine



# Conclusion

- **Thin septum location is moved to 2 m upstream of qi6.1, in conventional on-axis injection scheme**
- **Beam parameter changes**
  - $\beta_x = 988 \text{ m}, D_x = 1.48 \text{ m}$
  - $D_{px} = -0.0058, \alpha_x = -3.94$
- **Tracking results shows little influence of location change on injection efficiency**