

Electron Beam Tomography at FAST Injector

Tianyi Ge
Charles Thangaraj

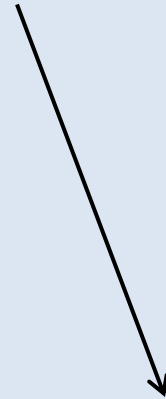
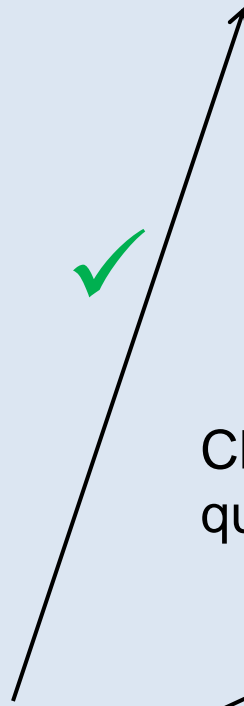
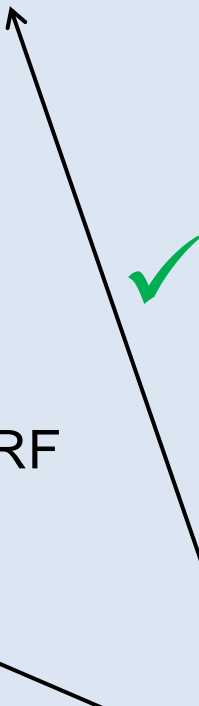
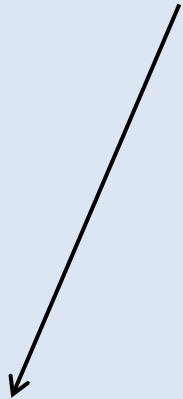
Tomography is a tool to reconstruct the phase space of a particle beam

?

Longitudinal phase space

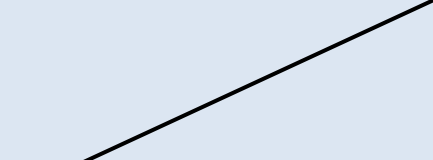
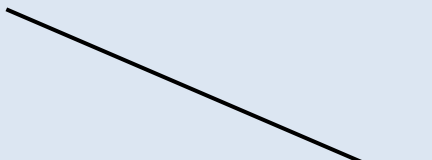
?

Transverse phase space



Changing the phase of a RF cavity

Changing the strength of a quadrupole



Projections

Reconstructed xx' phase space of one quad

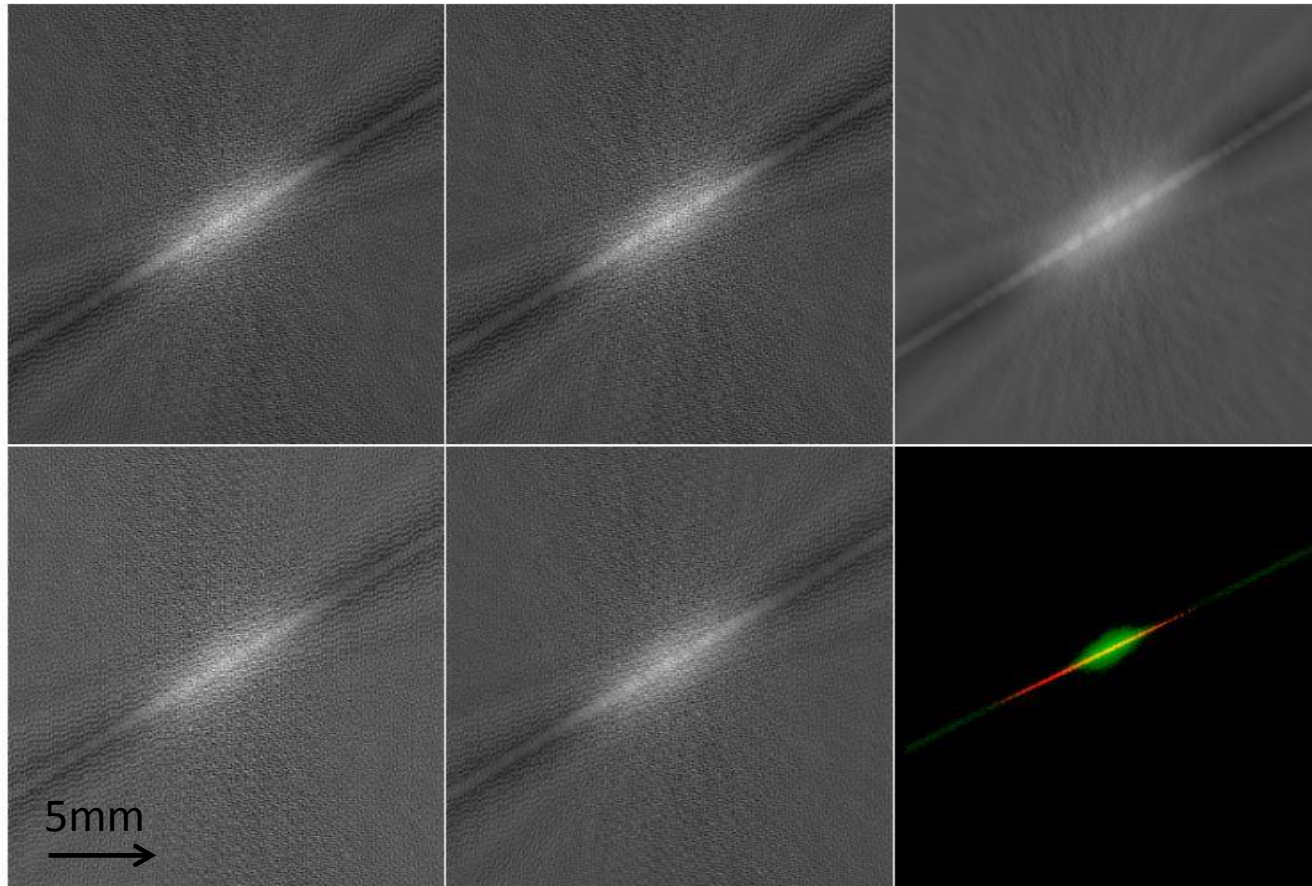


Figure 1: (1,1): cav method with running time 2.411s. (1,2): cimmino method with 2.197s. (1,3): drop method with 2.056s. (2,1): art method with 784.641s. (2,2): sart method with 0.864s. (2,3): phase space contrast between elegant simulation and sart method.

Next step...

1. Running sart algorithm on **experimental data** of 3 quads.
2. Checking if the rotational angles that reconstruct the xx' phase space work for **yy'** .
3. Investigating the image reconstruction of the **longitudinal** phase space.