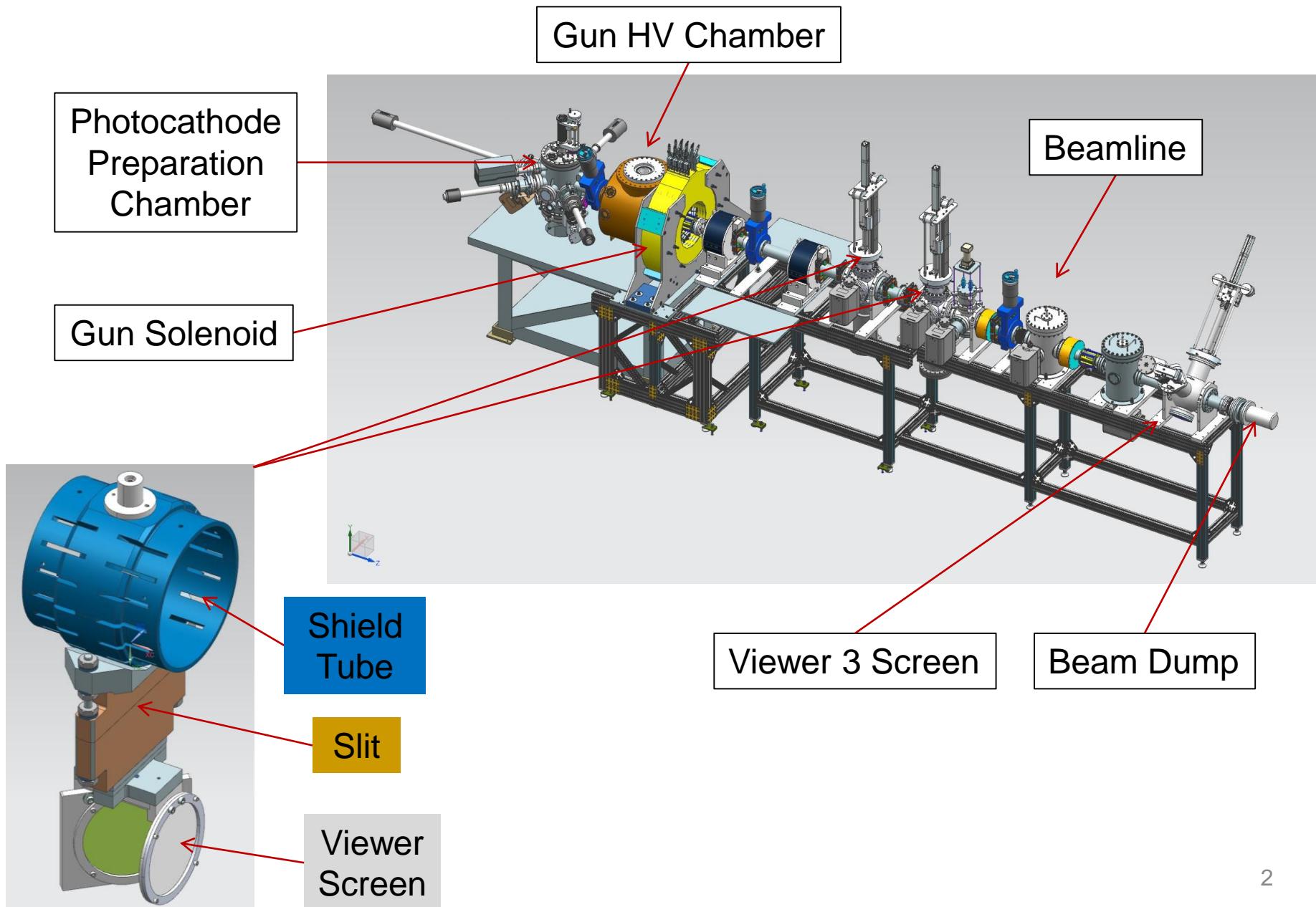


Cooler e-source

Magnetized Beam LDRD Progress Report

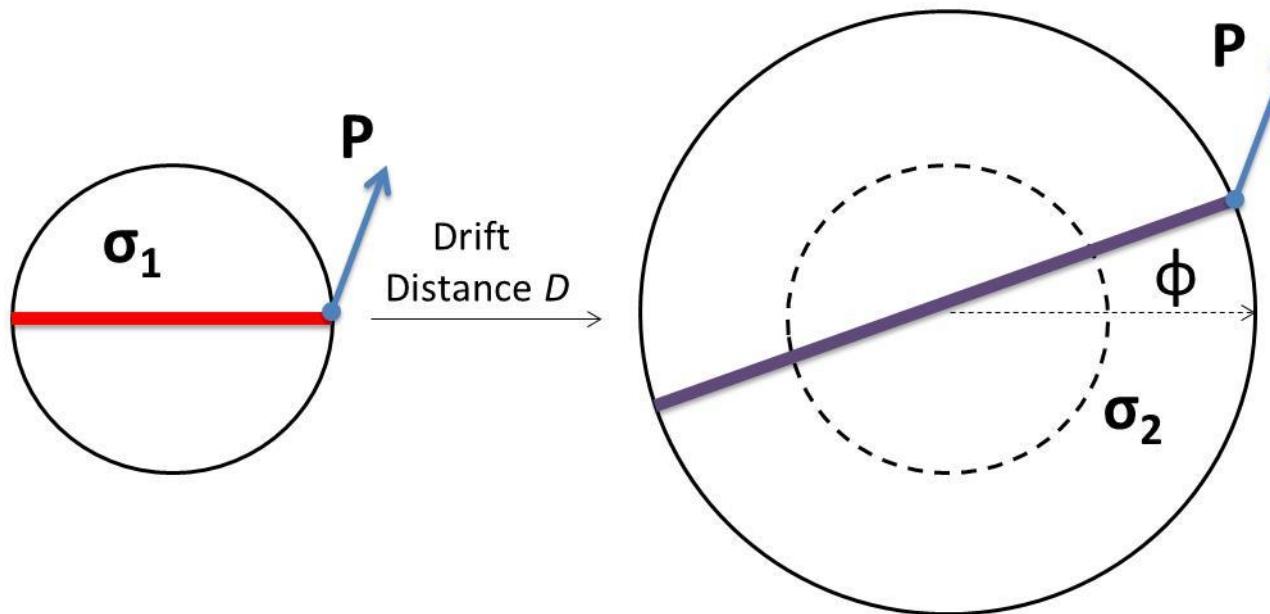
June 29, 2017

Magnetized Electron Source at GTS



Measuring Beam Magnetization

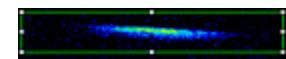
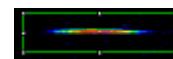
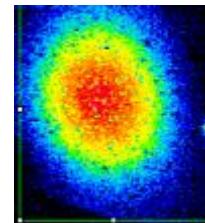
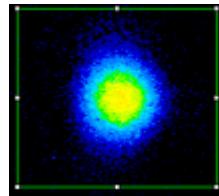
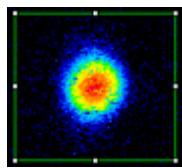
- Use slit and viewscreens to measure mechanical angular momentum:



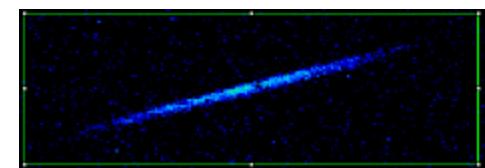
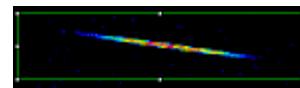
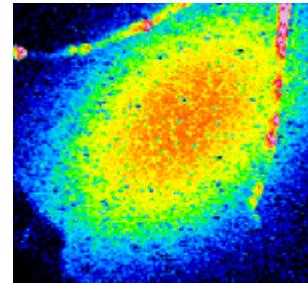
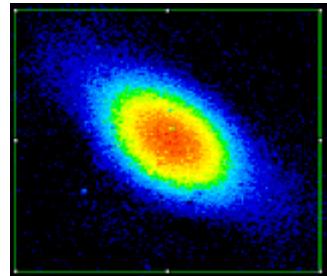
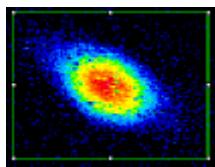
$$\langle L \rangle = 2p_z \frac{\sigma_1 \sigma_2 \sin \phi}{D} = eB_z a_o^2$$

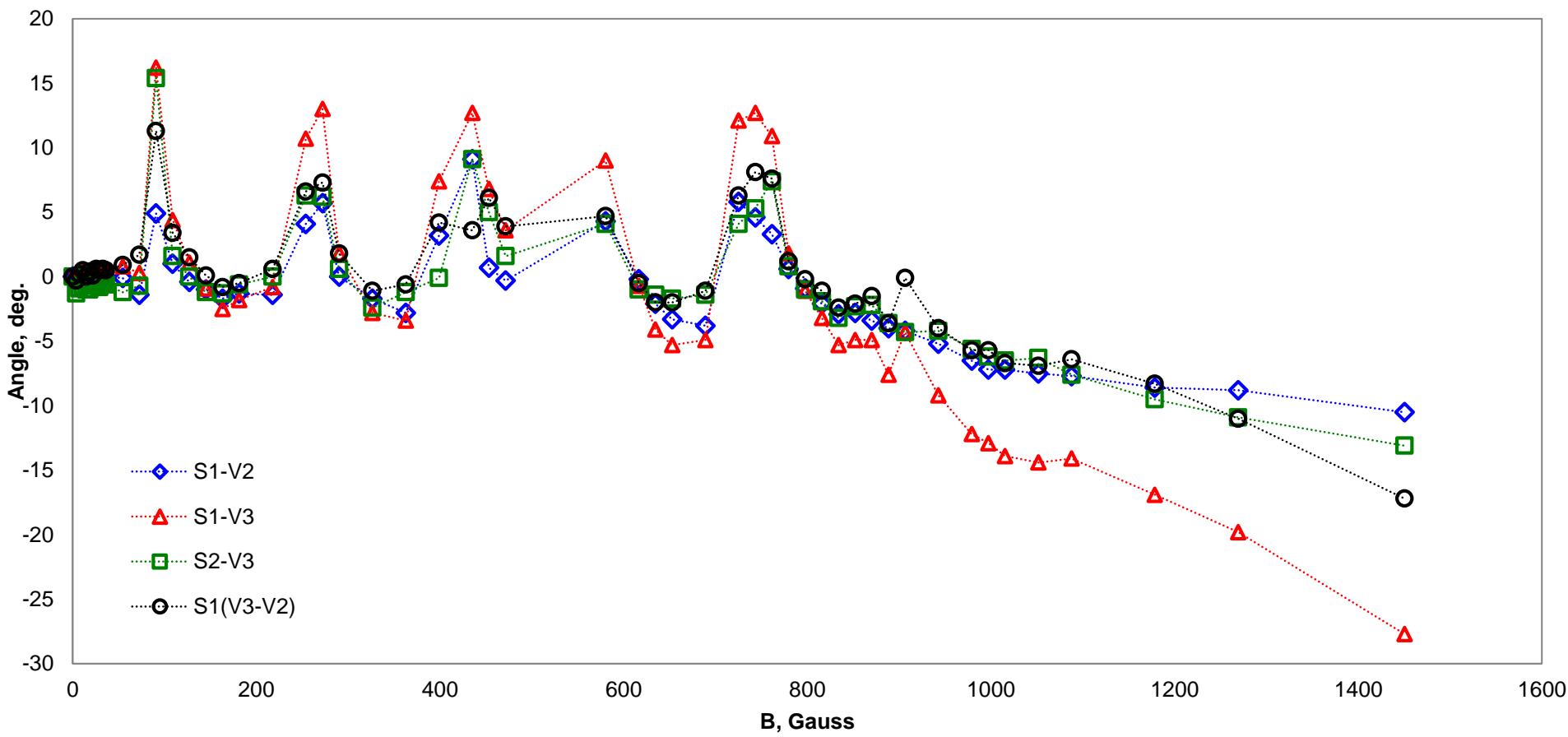
B_z : solenoid field at photocathode
 a_0 : laser rms size
 Φ : rotation (sheering) angle

0 G
at photocathode



1088 G
at photocathode





Outlook: July – September

- Simulation of magnetized beam sizes and rotation angles
- Run 5 mA magnetized beam
- Design TE₀₁₁ cavity