

LhARA Meeting

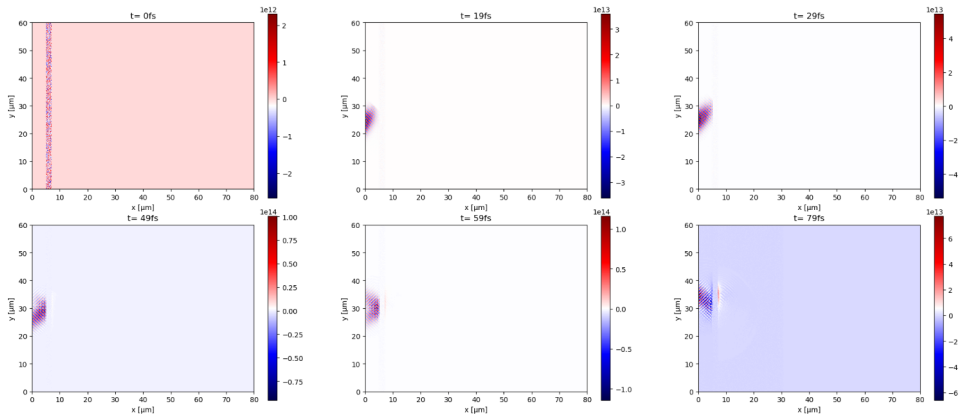
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October 1, 2020

TNSA 2D Simulations – SMILEI

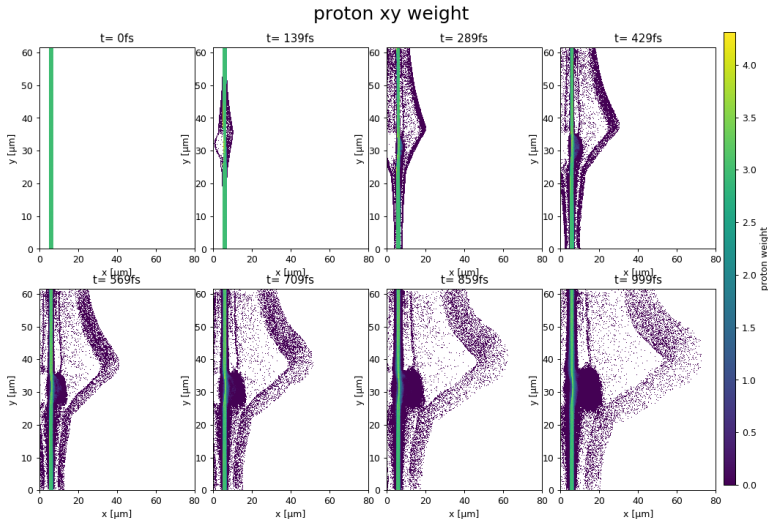
Laser: $\lambda_L = 0.8 \mu\text{m}$, $E_L = 2.5 \text{ J}$, $\tau_L = 25 \text{ fs}$ (FWHM), Angle of Incidence = 45°

Ex



TNSA 2D Simulations – SMILEI

Simulations have assumed an arbitrary $2\ \mu\text{m}$ plastic foil for checking parameter convergence still in progress. (In reality may need to use thicker foil)



Generating Distribution

A third dimension is smeared from transverse dimension to obtain a 3D distribution to send into the beamline.

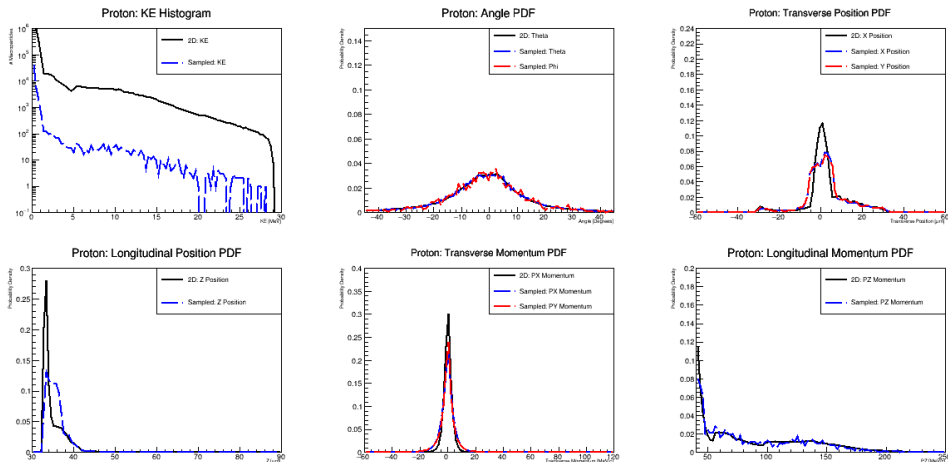
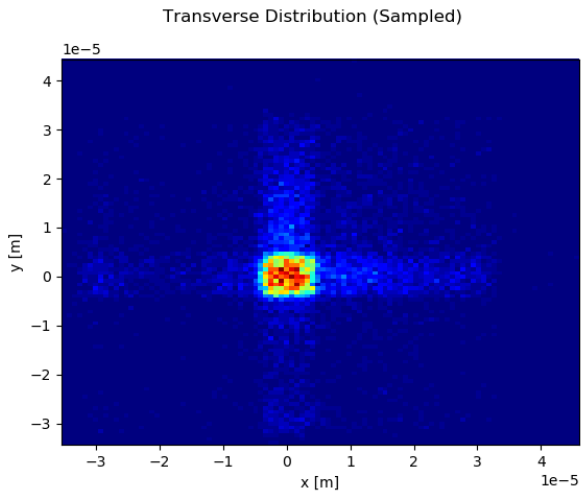


Figure: Comparison of sampled proton beam distribution against the simulations from SMILEI.

Generating Distribution



- 1 Methods on dealing with enhanced 2D simulation energies compared to experiments?
 - Reasoning for adjusting pulse duration?
(<https://www.nature.com/articles/s41467-018-03063-9>)
- 2 How comparable is the spread of beam from 2D simulations compared to experiments?
- 3 Are there particular benchmark experiments used to test simulation parameters?