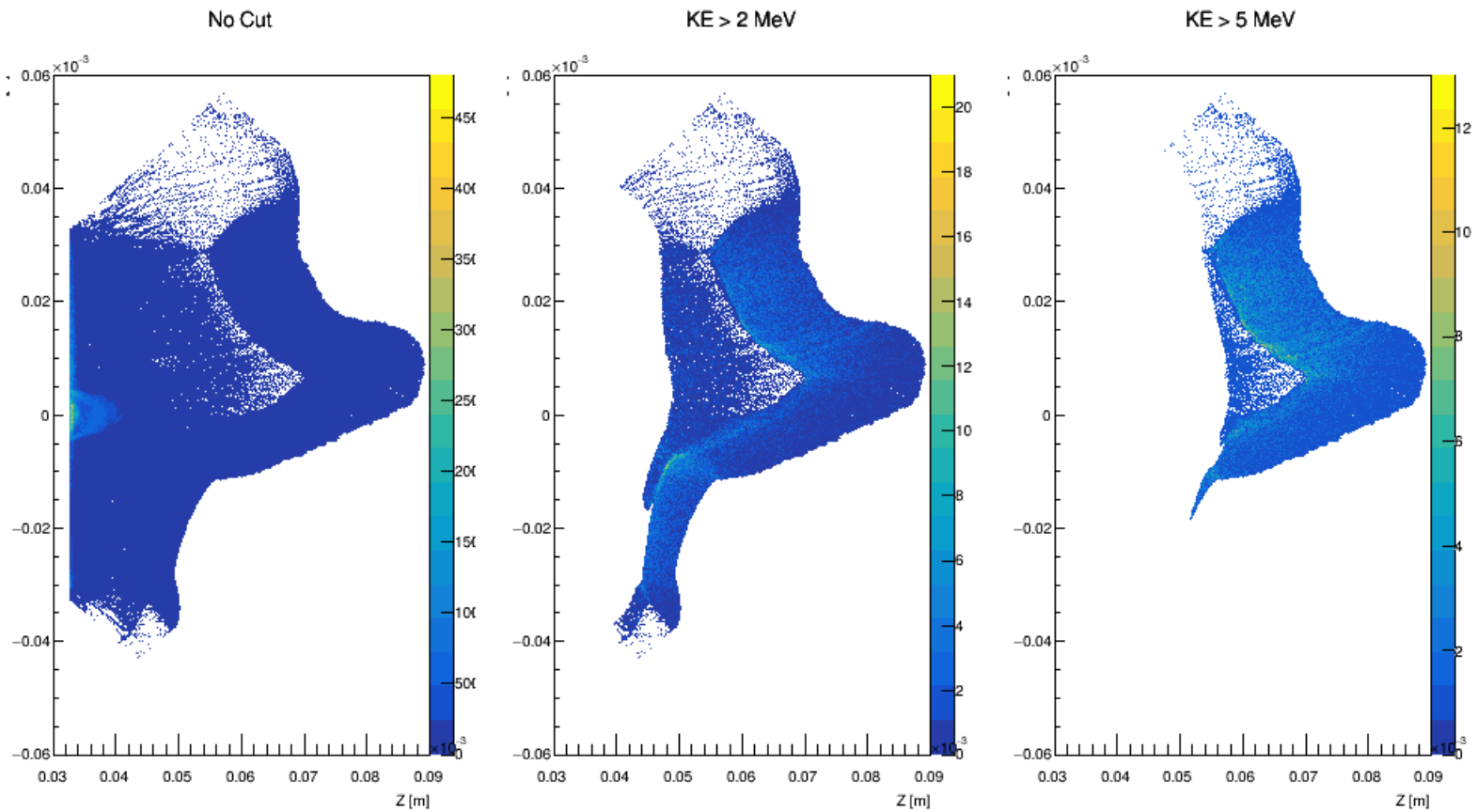
LhARA Meeting

Hin Tung Lau

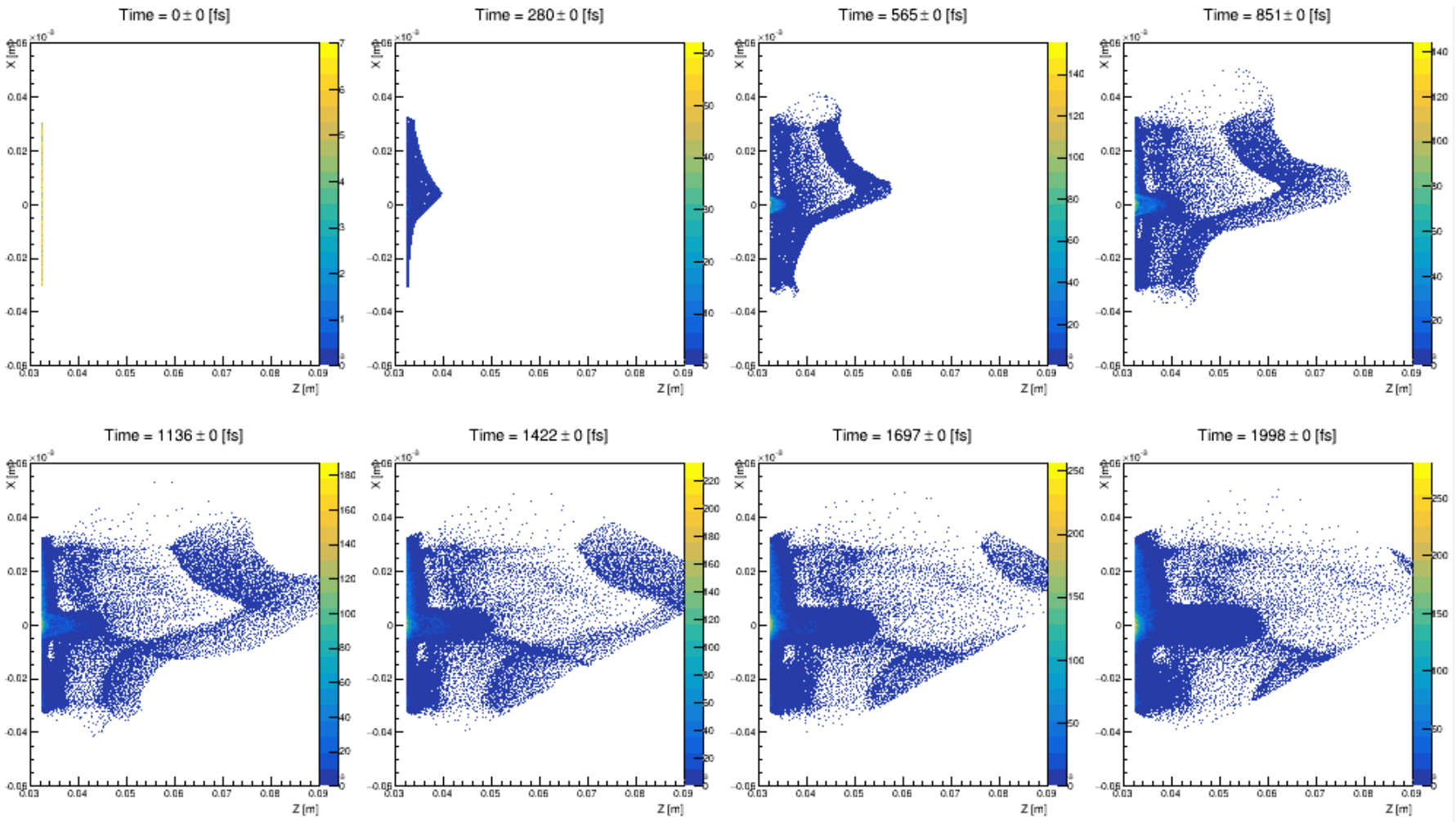
July 30, 2020

Last Week – Energy Cuts



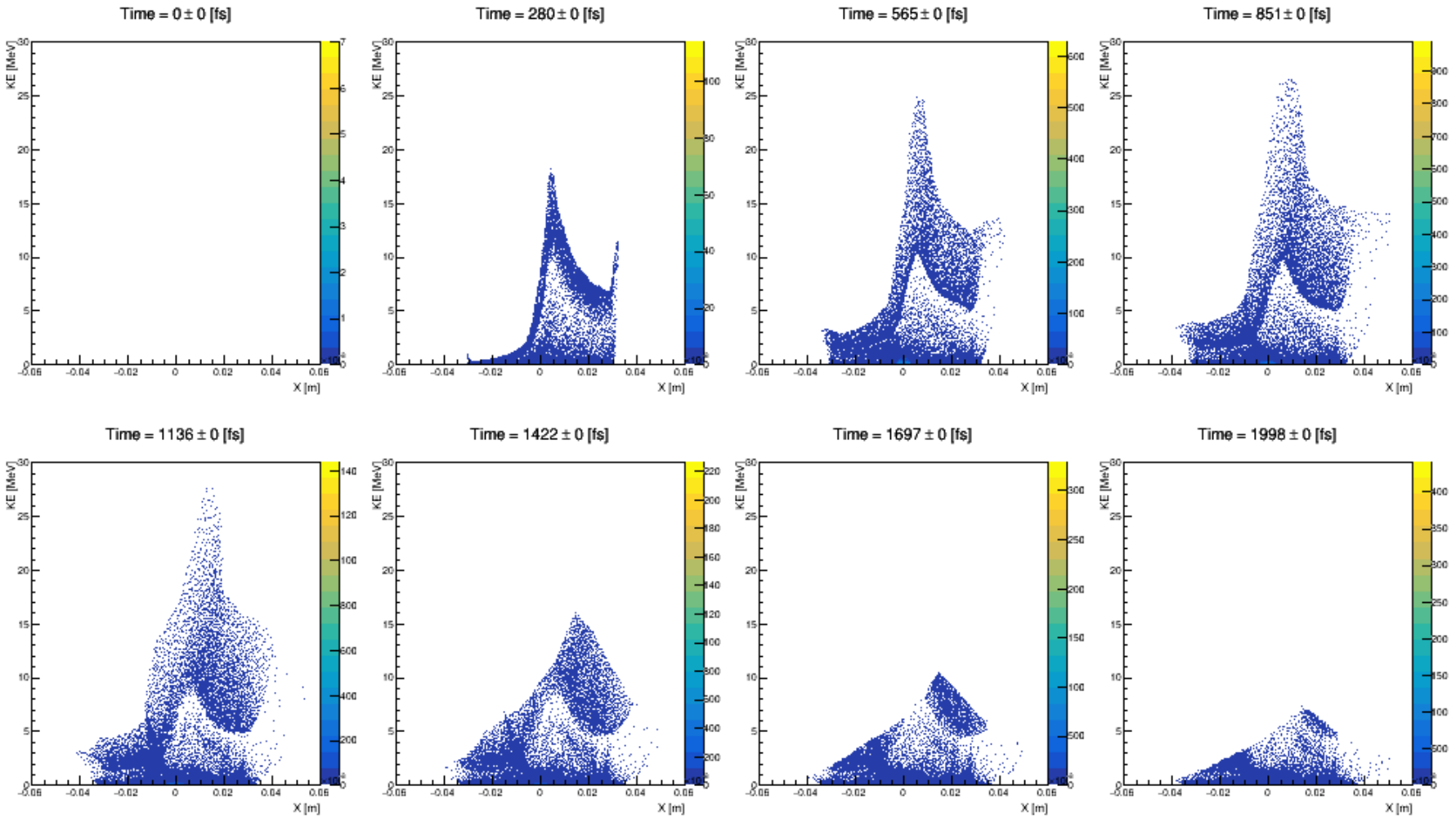
- Last week considered energy cuts for passing distribution to beamline
- Concern about later timesteps for the cut protons

Simulating for 2 ps – Protons



- High energy proton bunch leaving simulation
- (ppc=400, resolution=15nm)

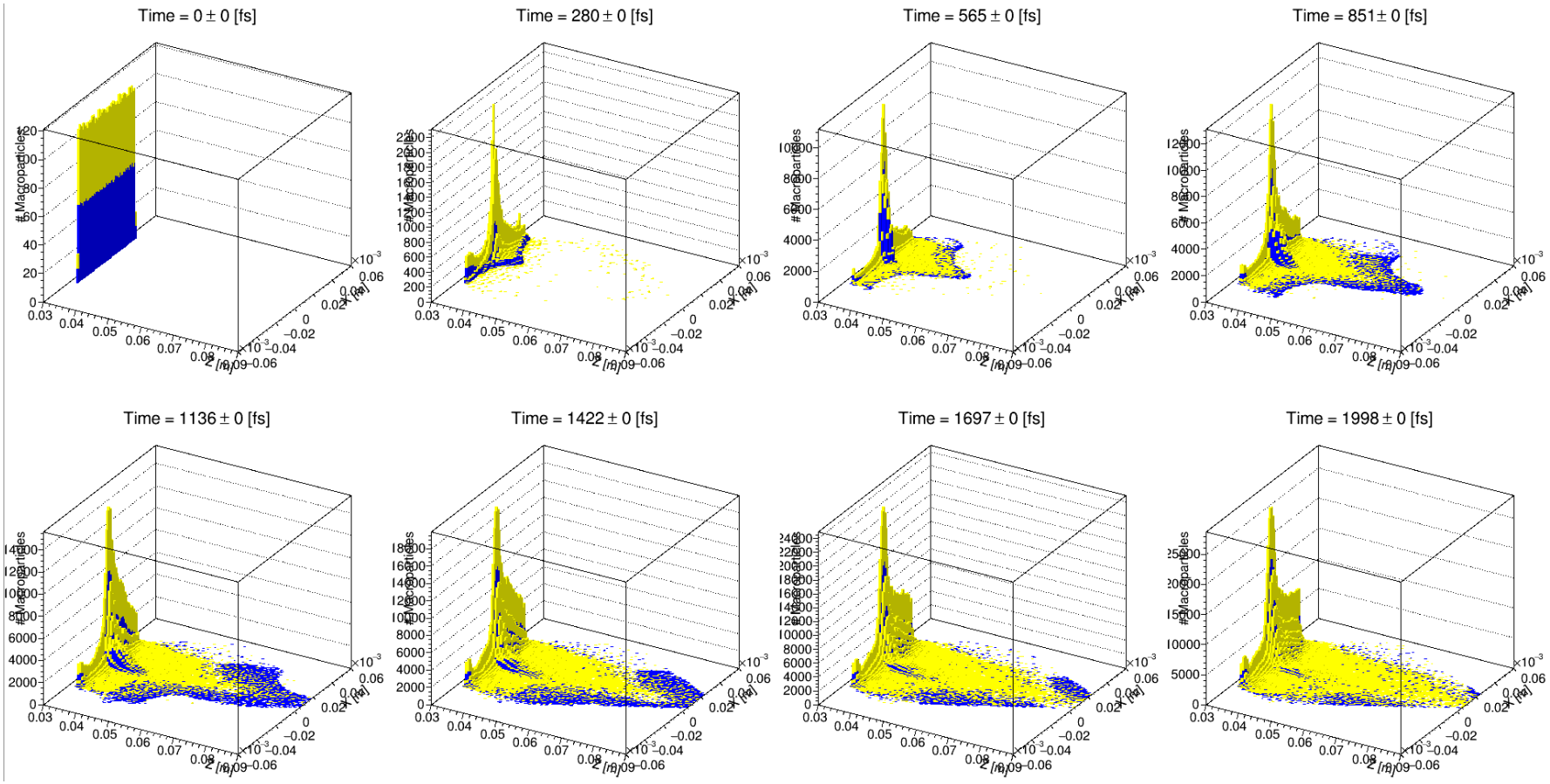
Simulating for 2 ps – Protons



- Plot of proton kinetic energy against the transverse position
- Protons in the later timesteps appear to be relatively low energy compared to the initial high energy bunch

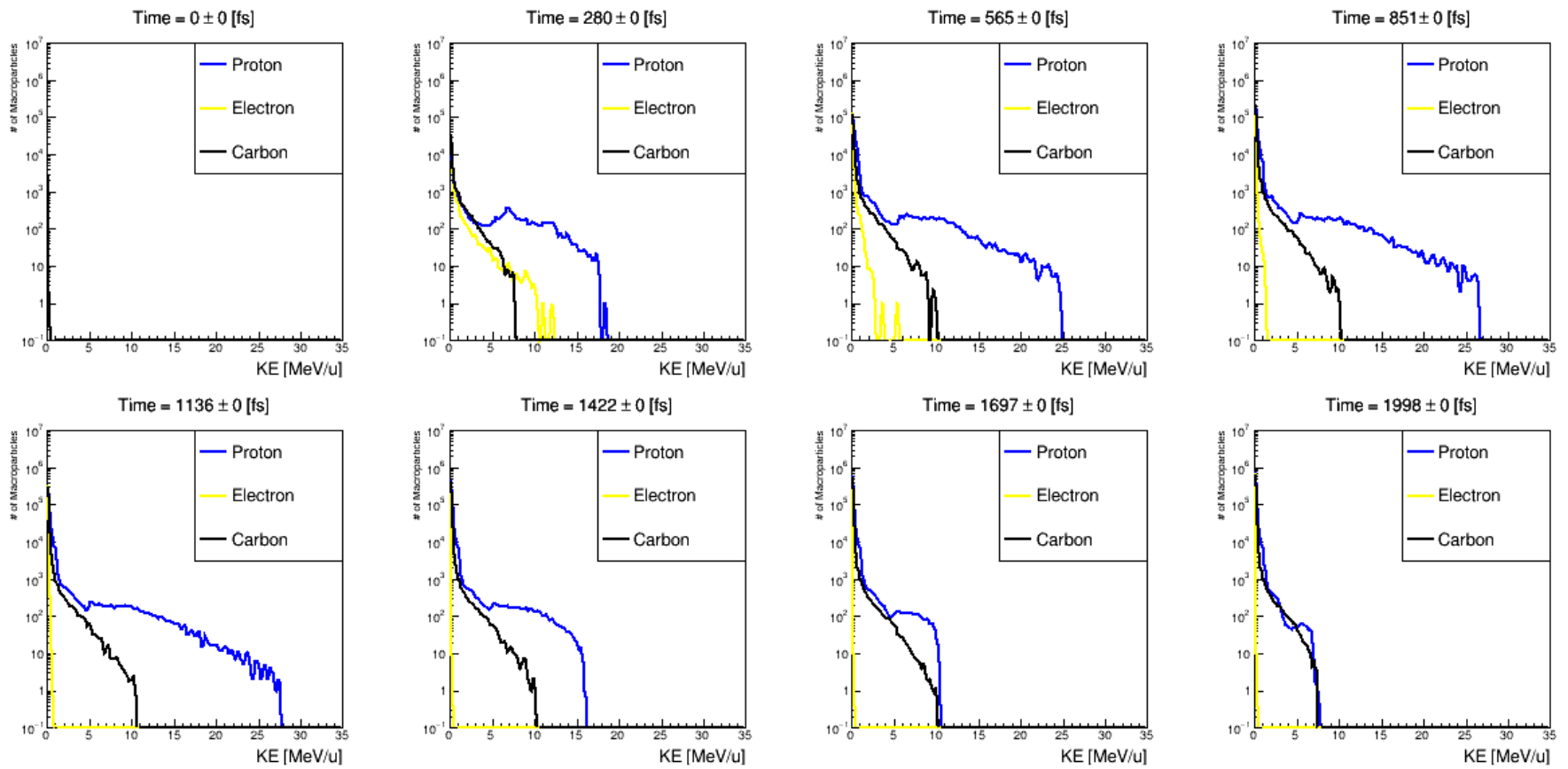
Simulating for 2 ps – Protons + Electrons

Protons (blue) + Electrons (yellow):



- Need to think of a good way to count particles escaping

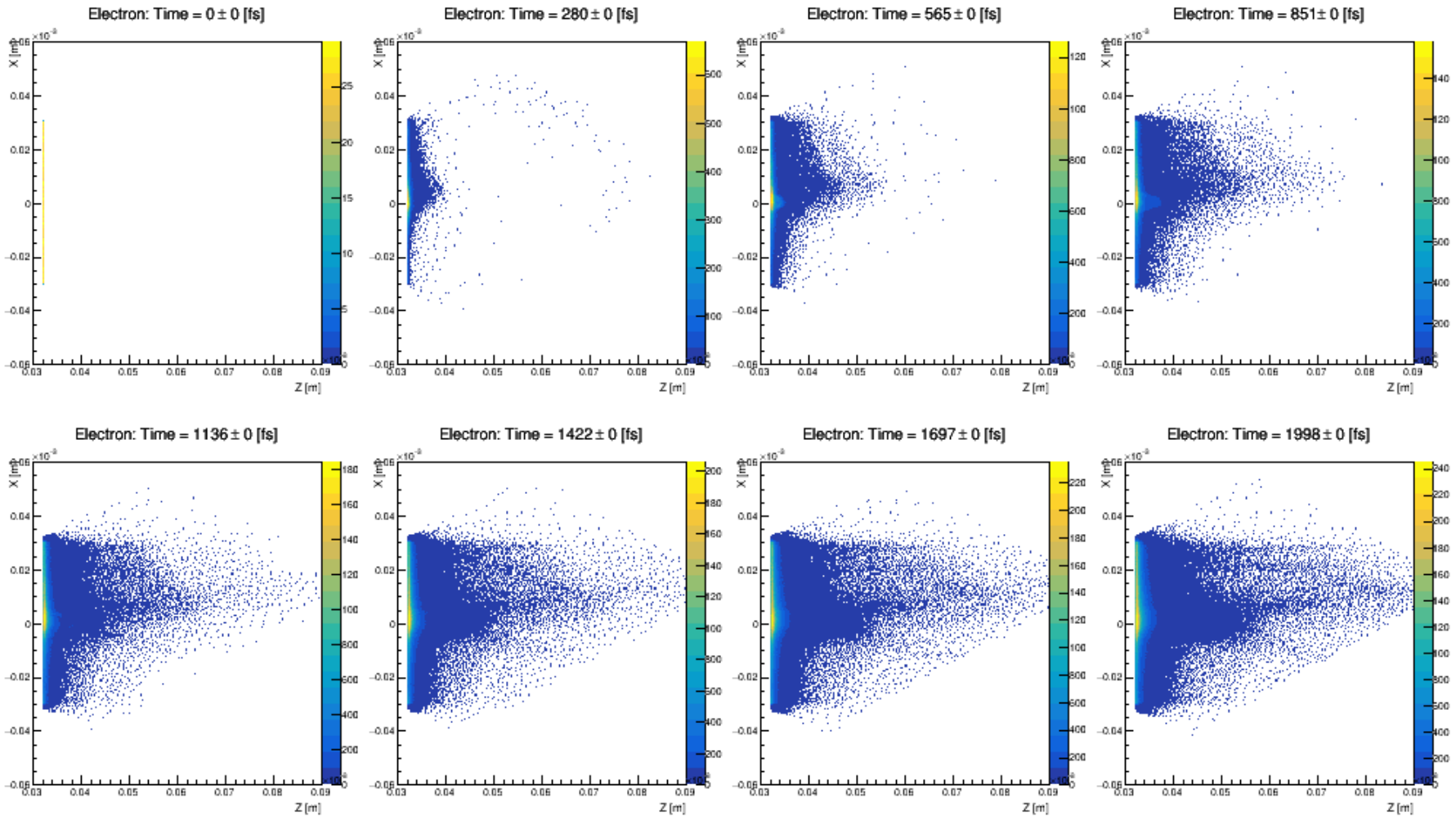
Simulating for 2 ps – Protons + Carbon



- Max energy of C^{6+} seems to be around 10 MeV/u, protons achieve maximum energy of about 28 MeV, electrons max energy at 12 MeV at early timesteps for these simulation parameters appear to get lost

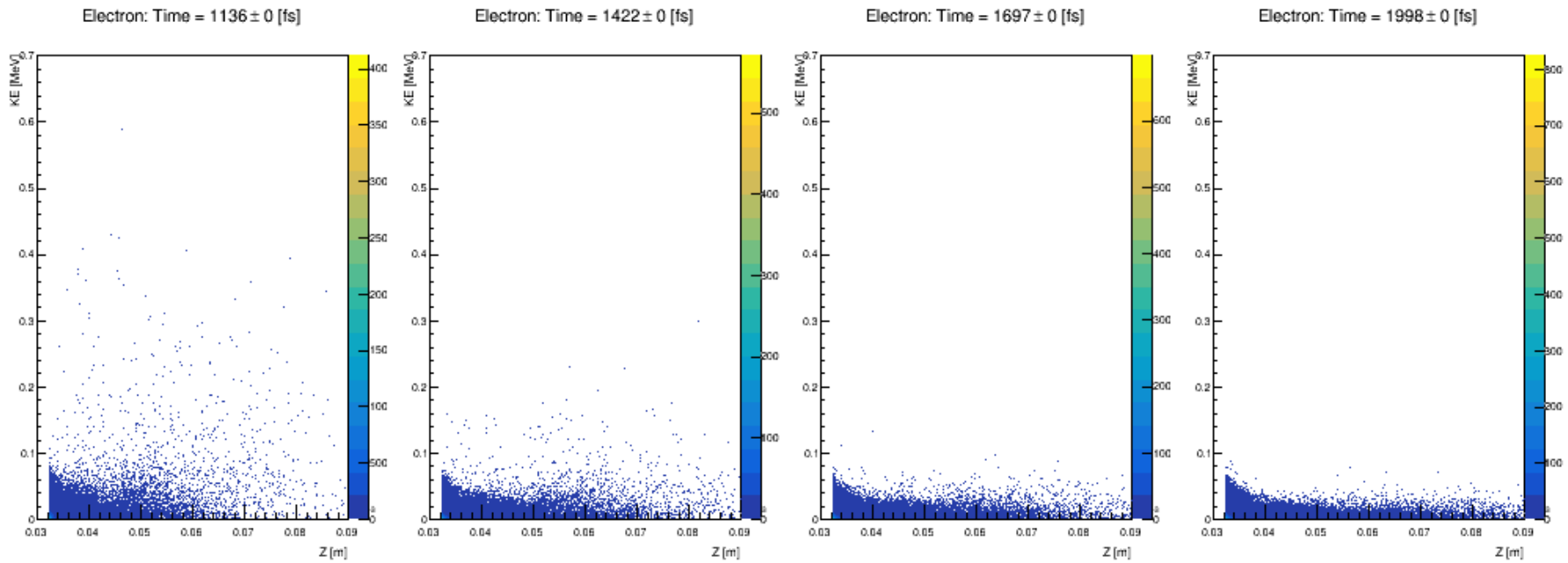
Backup

2D position spectrum of electrons



Backup

Plotting the kinetic energy of electrons against longitudinal position



Backup

Protons (blue) + Electrons (yellow) + Carbon (gray):