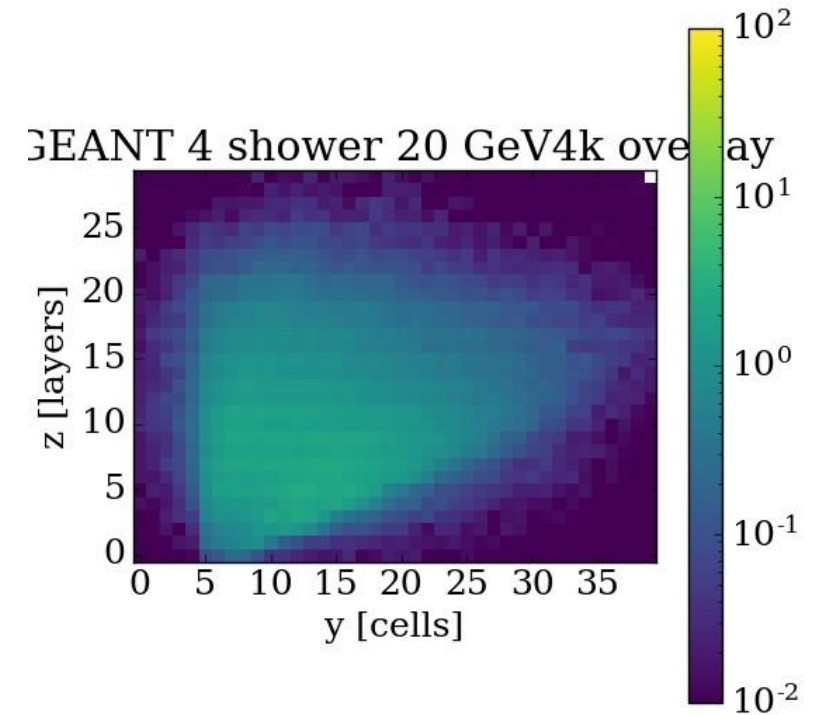# Conditioning on angle of incidence

- Fixed energy- 20 GeV

- Vary polar angle- no transformation (i.e. same initial point of incidence at calorimeter center)

- Shifted gun position in y: 6th-7th bin

- Angular range: 30-90 degrees

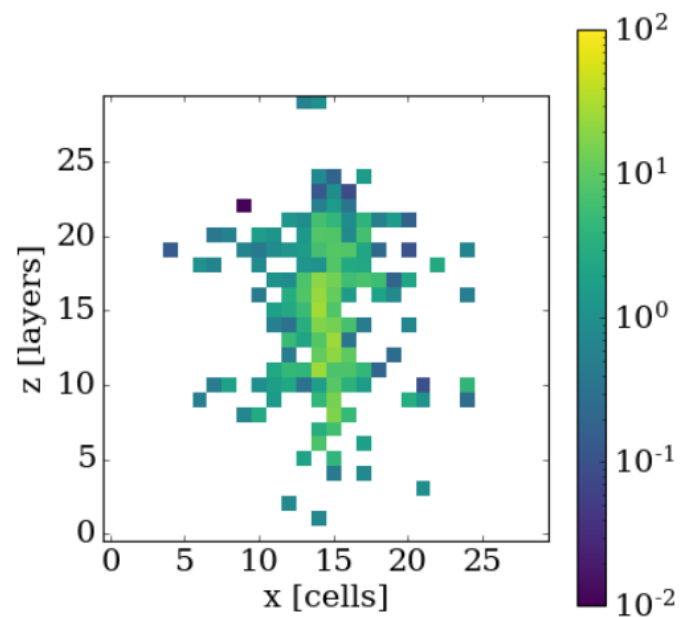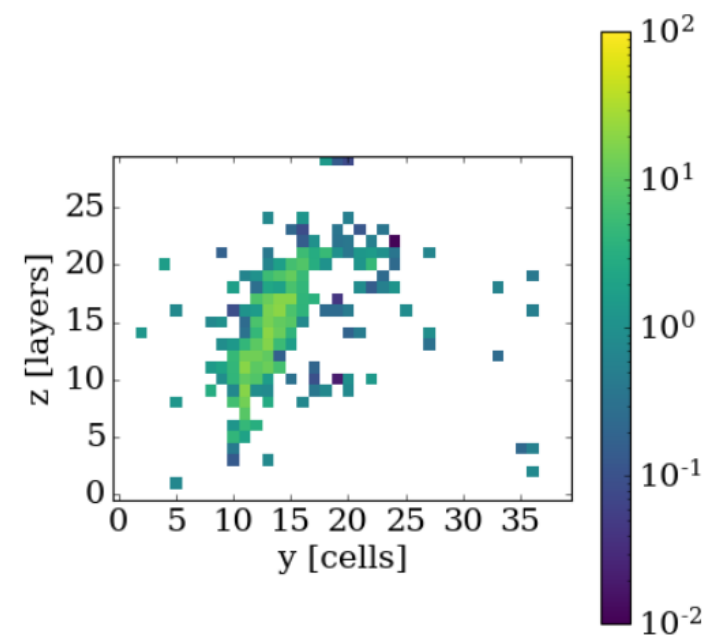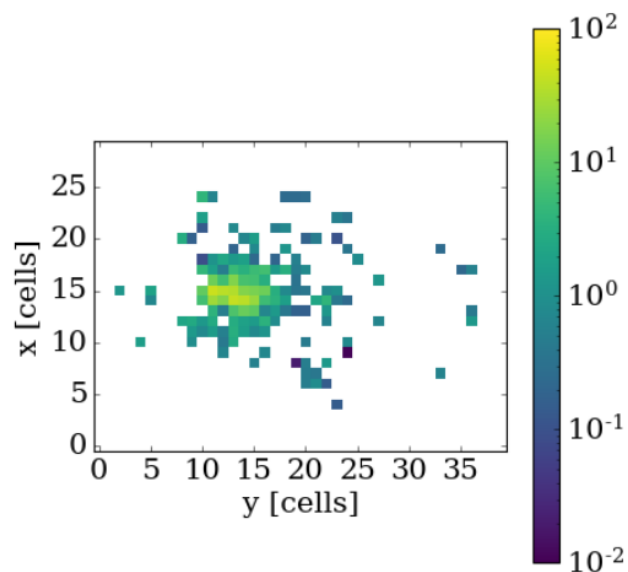- Calorimeter block: 30x30x40

Update on Training

- Was using 87k showers generated by Engin

- Continued running for another 100 epochs since Monday- found decrease in network performance

- Engin has since generated more showers- now have 137k showers

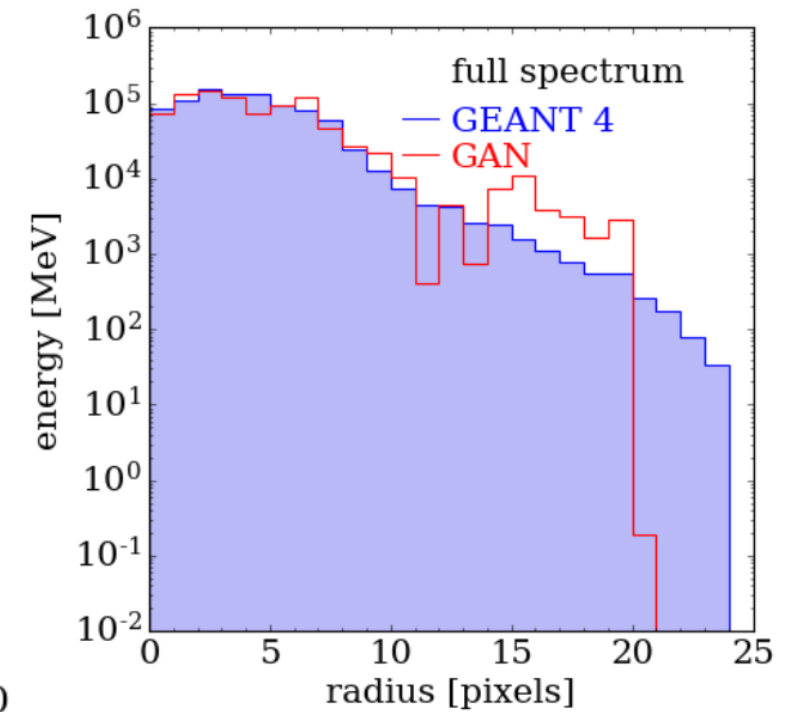- Have also been in contact with Anatolii about how to select the best epoch
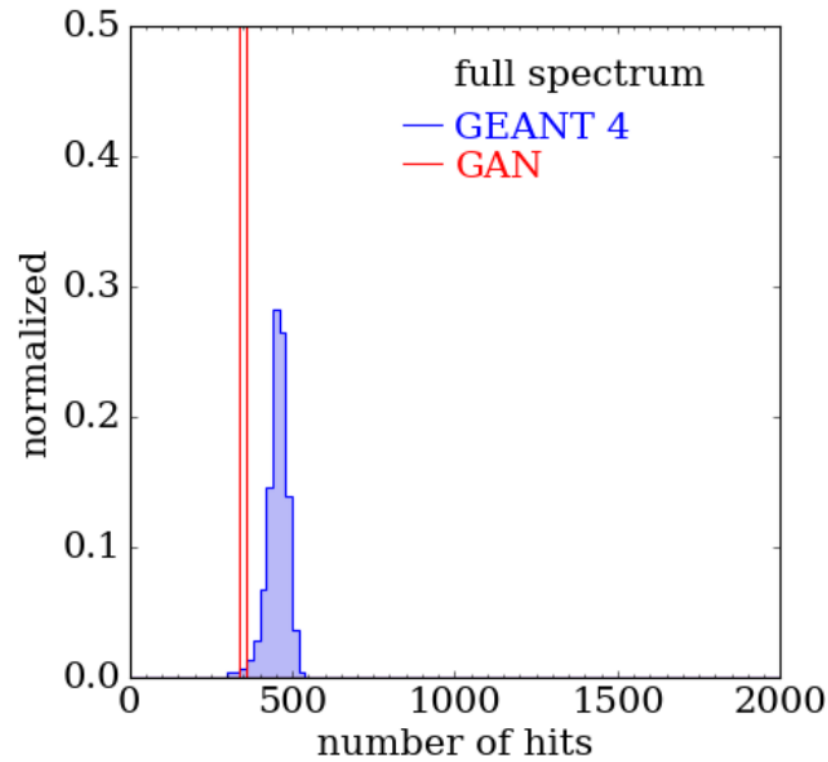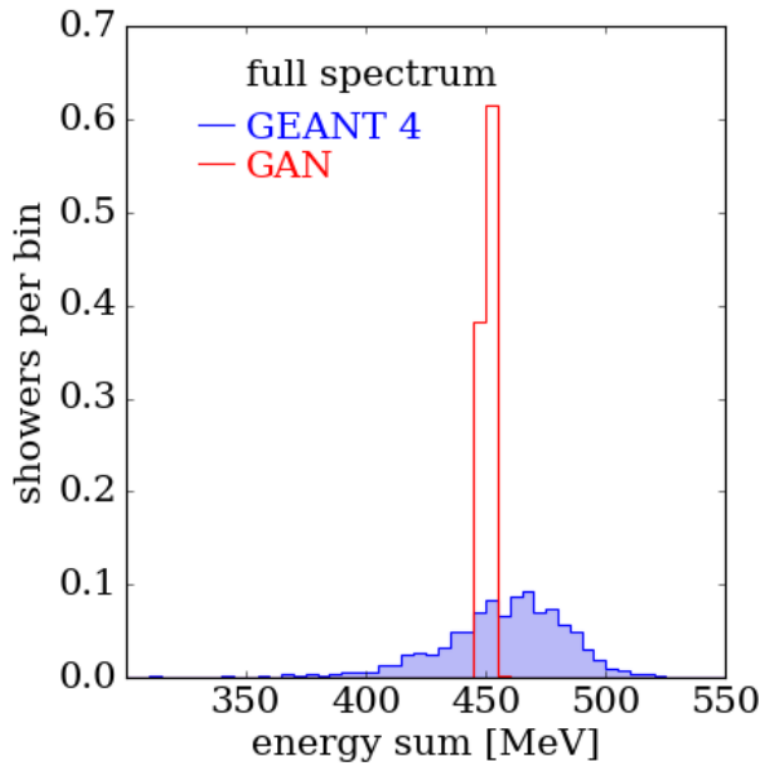
Generated showers

- Generated showers with GAN

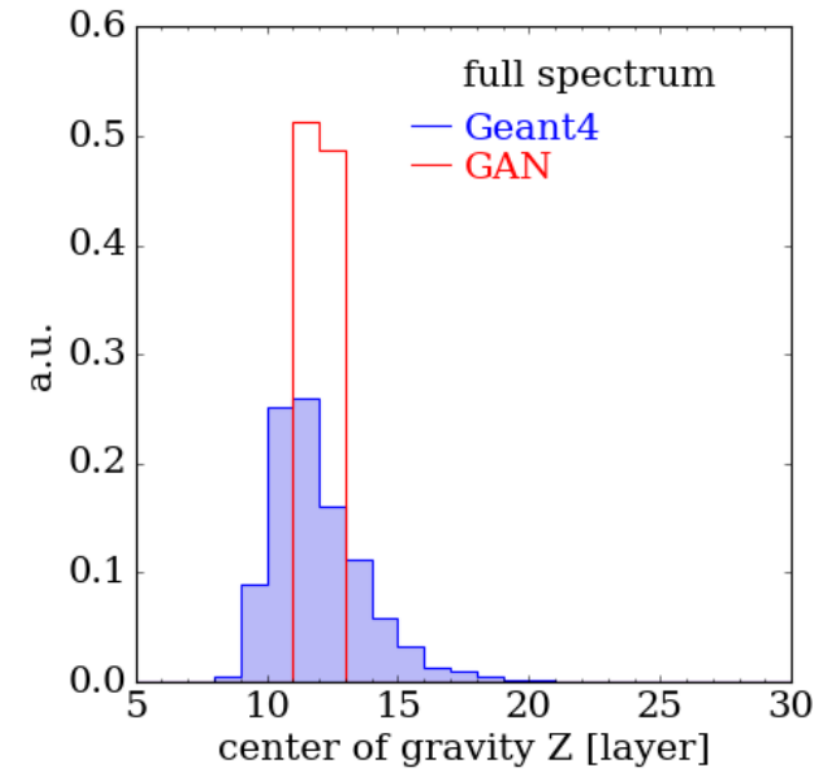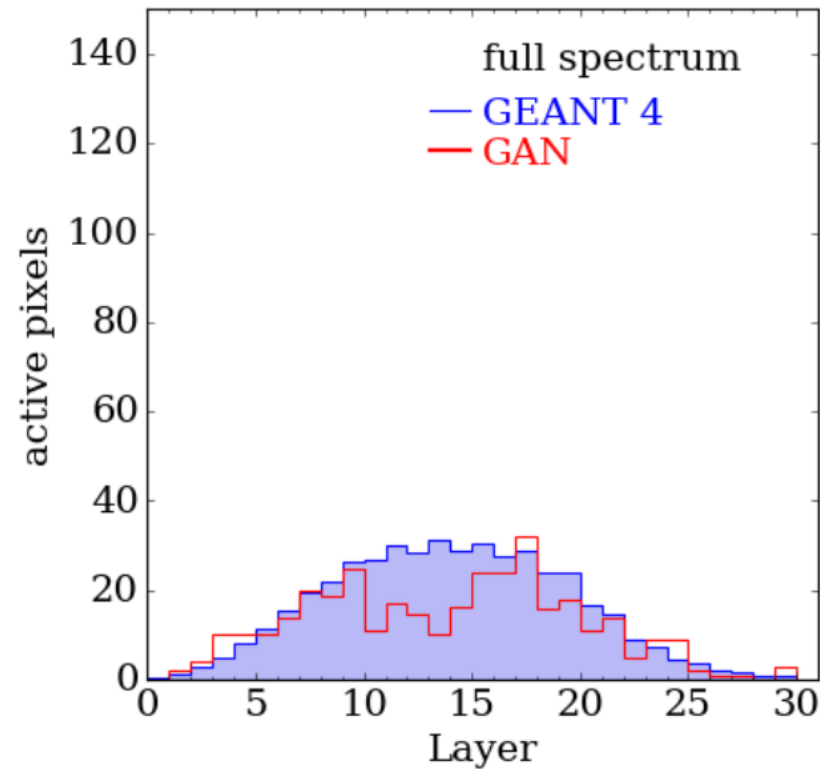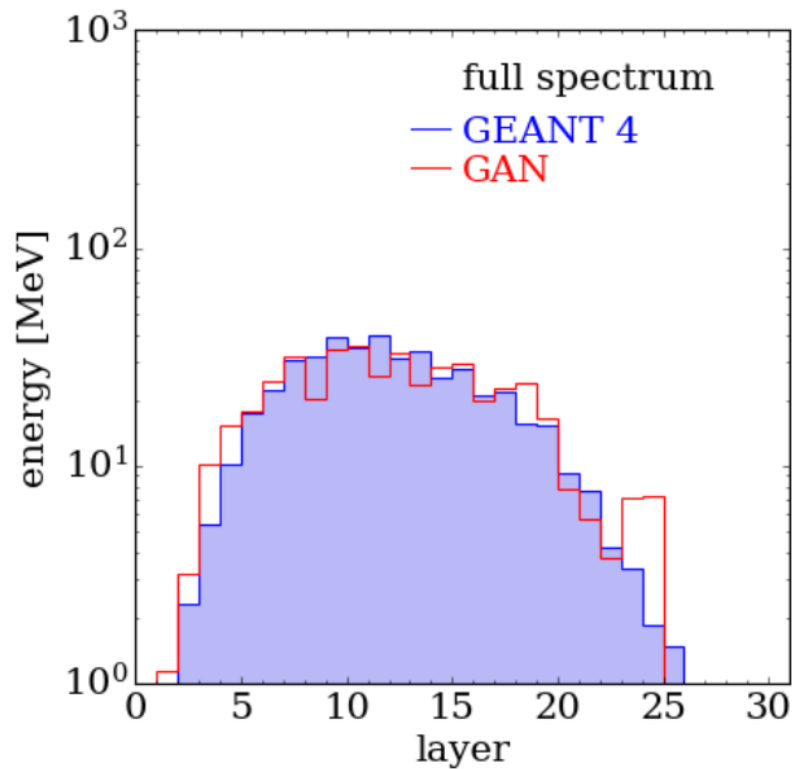- Trained for 24 hours- completed ~ 90 epochs

Physics performance

- Compare generated showers to GEANT4 showers with fixed angle of 60 degrees

Physics performance (cont.)

- Compare generated showers to GEANT4 showers with fixed angle of 60 degrees

Angular fit

- Fit straight line to shower to recover angle

- First try: place energy cut to fit only to the core of the shower

- Now performing weighted Linear Regression on core

- GAN is failing to reproduce angle

- Now wait and see how the network performs with the 137k showers…