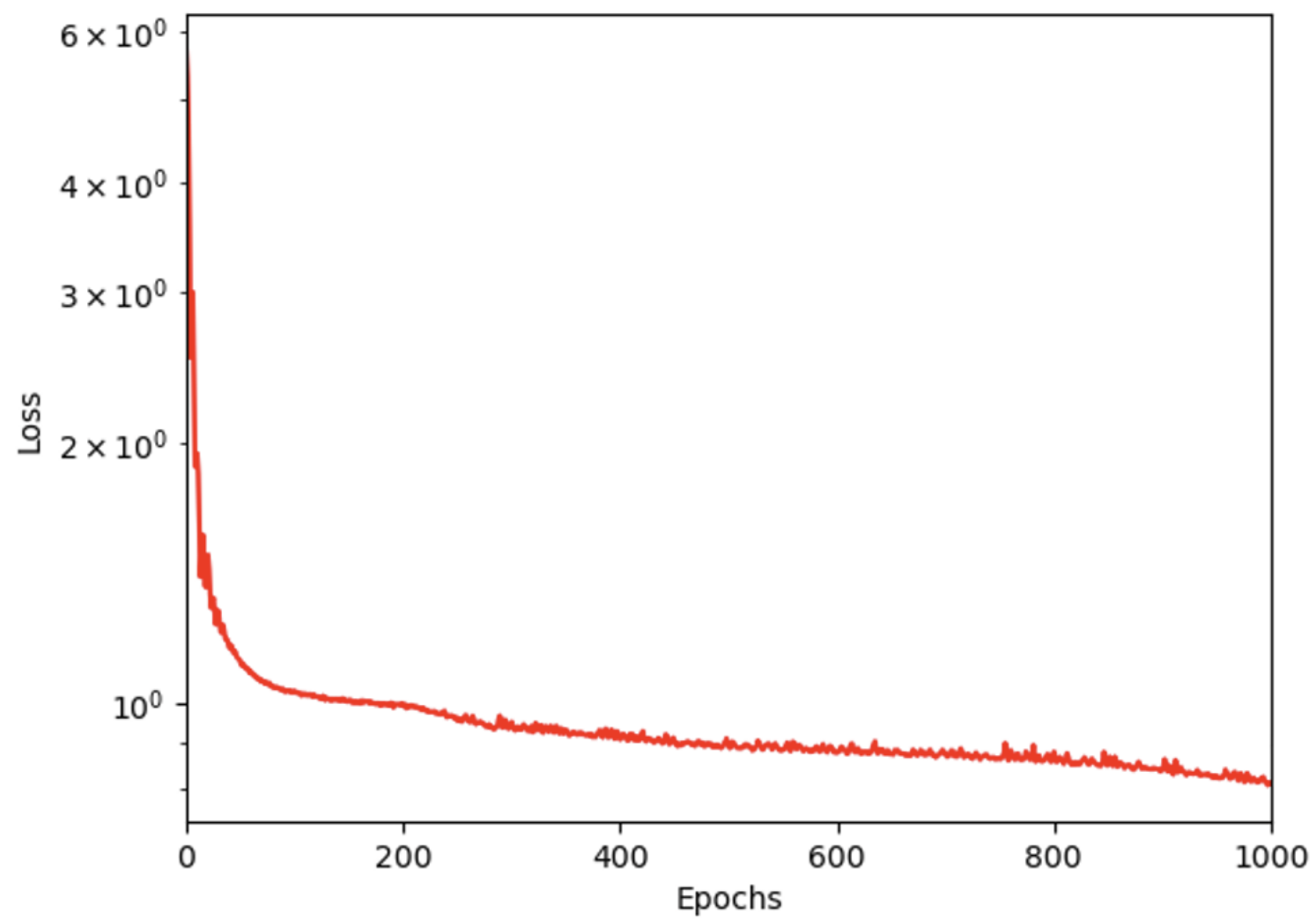


# New Energy Calibration Neural Network

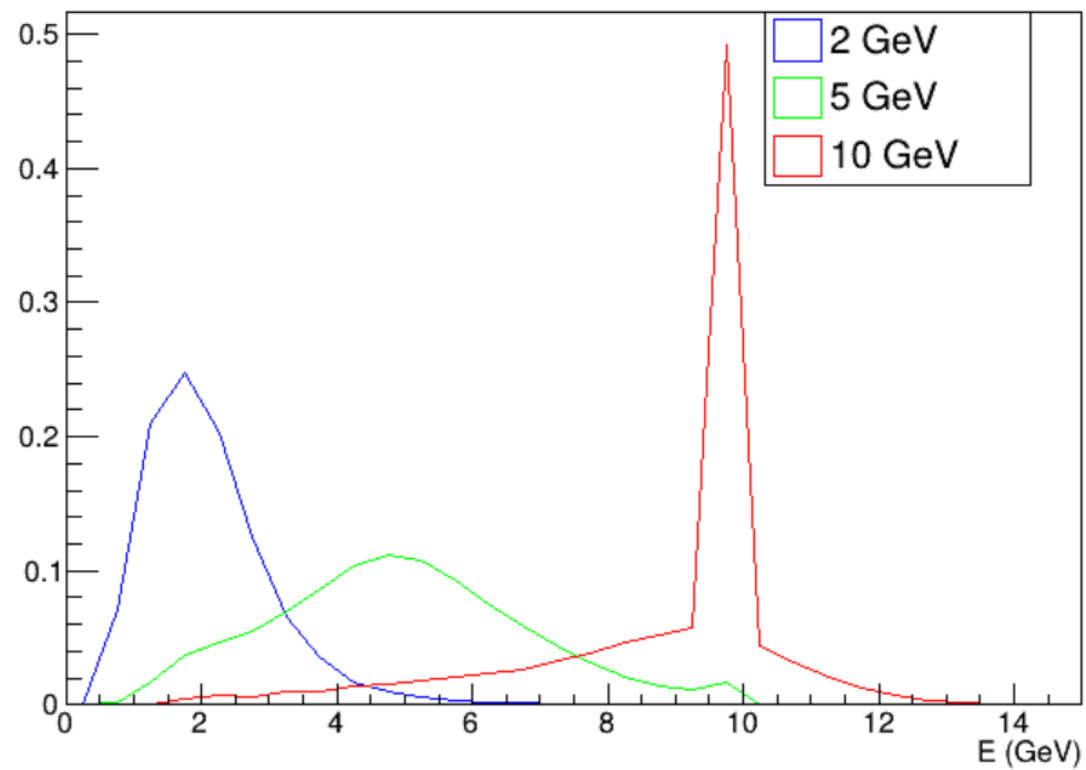
David Ruth

# Network Parameters

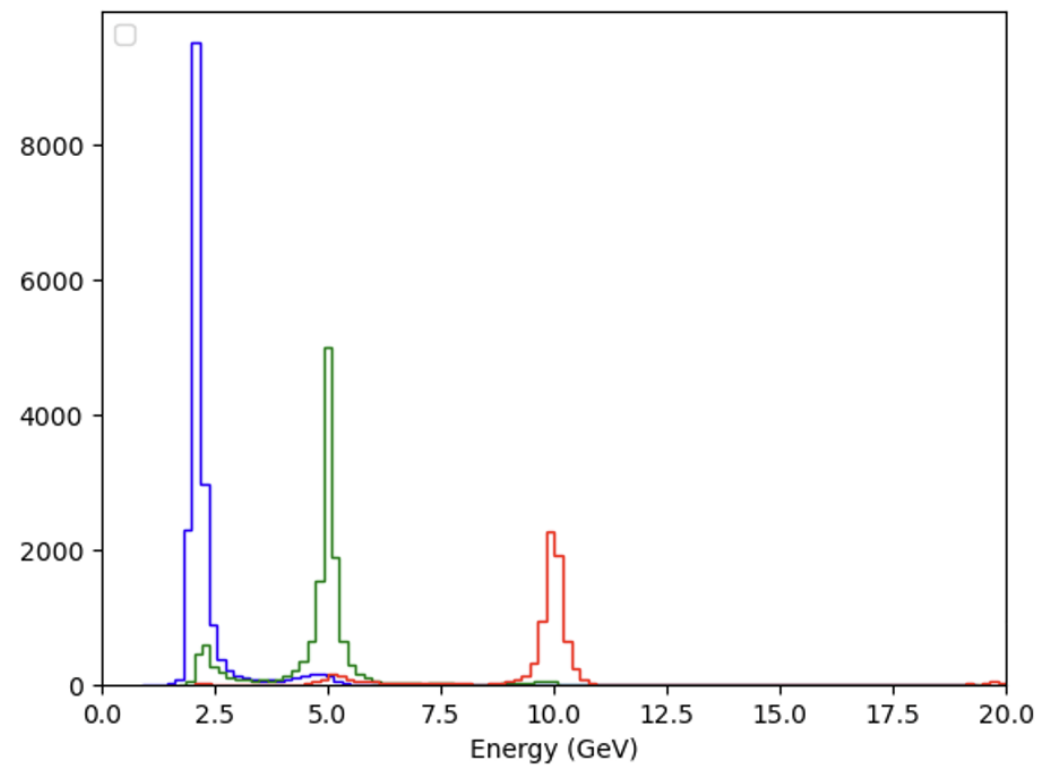
- Basic Multilayer Perceptron
- 3 Hidden Layers: 256, 128, 64 neurons
- Learning Rate: 0.02 (Decays by 0.5 after 1000 epochs without  $1e-4$  improvement in the loss)
- Loss Function: Huber Loss
- Optimizer: Adam
- Data Loading: PyRoot NTuple -> NumPy ndarray -> PyTorch Tensor
- Feature Scaling Implemented at  $1e-8$  level
- 10% Dropout



Calibrated Cluster Energy (MLP)



TMVA (Optimized)



New Network (Unoptimized, 5 minutes)