MLPRegressor with TrackToy

Training Variables

-Mu2eDriftAmbigCeMinusTracks.root

-Mu2eDriftAmbigFlatDIOTracks.root

-preprocessed data with scikit standardscaler

-target variable mcmidmom

	kknhit	kkchisq	kkprob	kkmidt0	kkmidmomerr	kkmidmom
81892	36	95.018723	8.737193e-07	680.820679	0.236629	99.640642
74572	32	33.779091	4.296862e-01	1586.905273	0.207664	99.567772
5836	33	61.865784	3.385042e-03	369.434814	0.194996	103.630213
12225	21	30.836308	9.951404e-02	609.083984	0.288090	104.210773
15969	29	42.557438	3.838677e-02	290.015900	0.220144	103.616945

MLPRegressor Variables

-2 hidden layers (3,6)

-epochs ~ 250) (converged around 200 epochs with 'early_stopping' set to True) *used 1000 for max_iterations
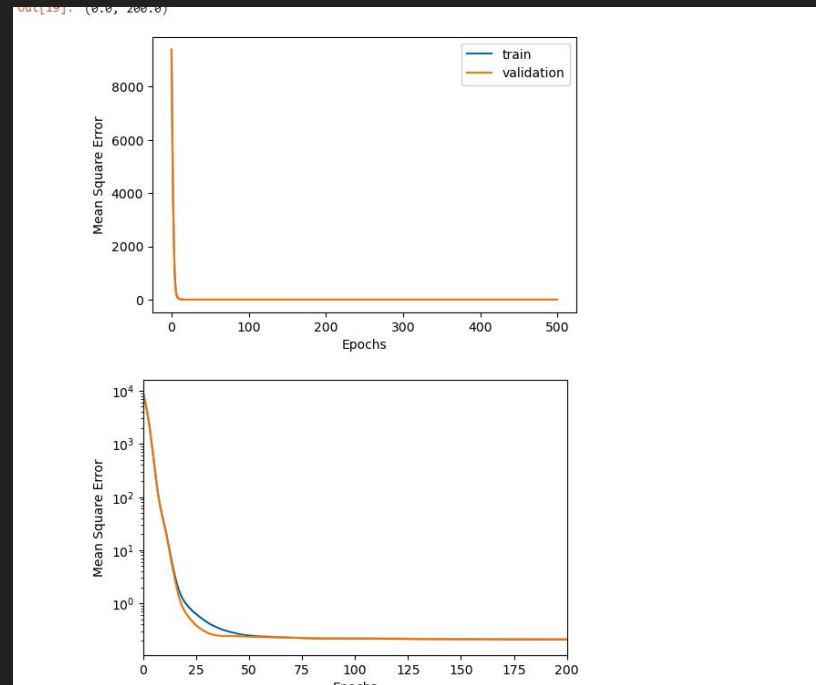
-activation: 'Relu'

-Solver: 'adam'

-60/20/20 split (train/test/validation)

Manual tuning yielded these variables
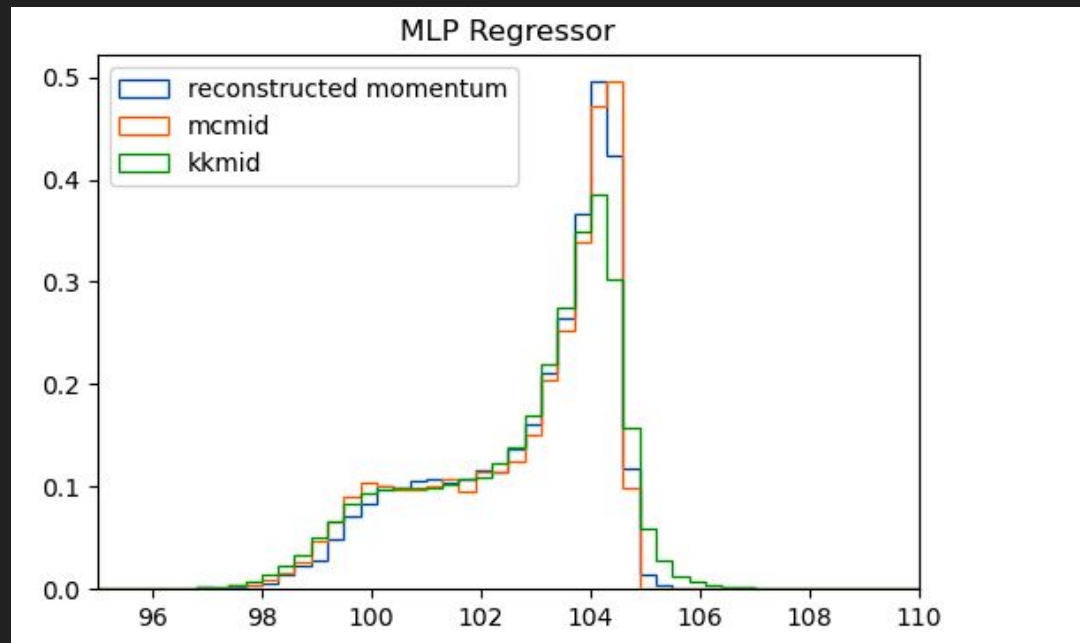
-Mean Square Error vs Epochs

-Training score slightly lower than validation

-(.184 vs . 185) at 200 epochs

Histogram of reconstructed momentum
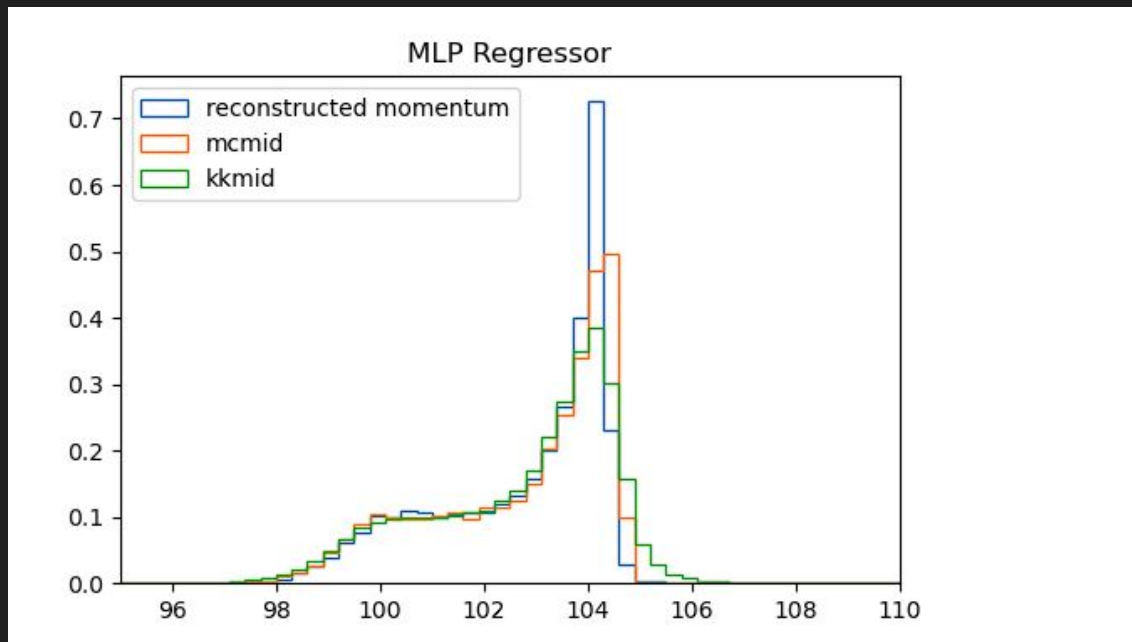
(Normalized)

Performance vs untuned

-Untuned (Default values for

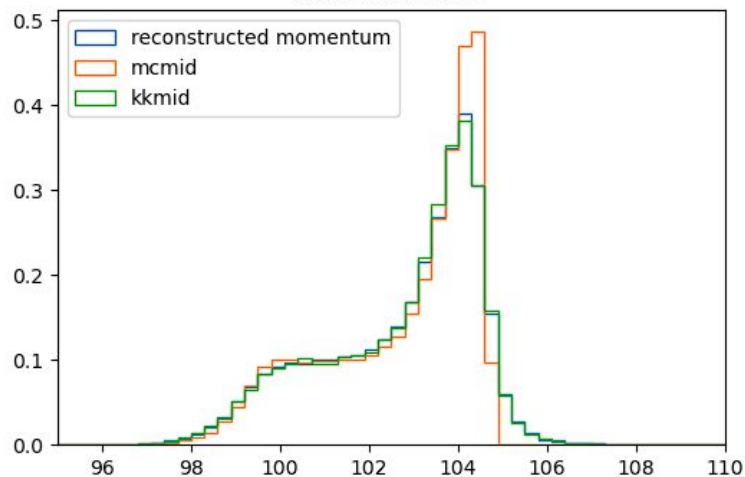MlpRegressor)

-Before standardization,

values modeled kkmid

-reconstructed momentum sharpest peak

Extra Plots