

# 05/17/2024 GELATO Weekly

Max Cohen



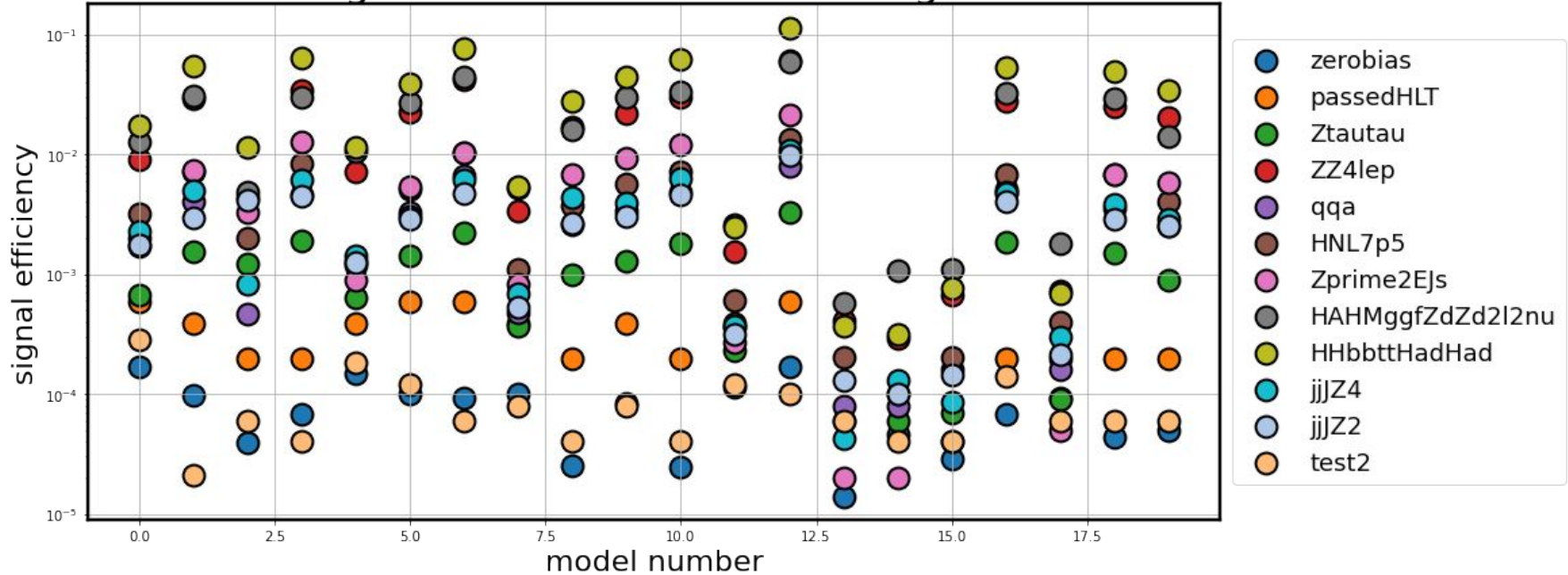
# Updates from this week

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- MC samples still being processed:  
<https://its.cern.ch/jira/browse/ATLMCPROD-11238>
- The new EB files require a newer release to access
  - I updated my release along with xAODAnaHelpers, so I submitted grid runs to make ntuples
  - I can't find the EB weight xml files for 2 of the 4 runs, talking to EB people about this
- Spent a lot of time working on this signal independent metric, nothing great so far
- Tried a smaller latent space for L1 model as well as VAE

# Retrained 20 models, here are the HLT results

## Signal Efficiencies For Each Signal



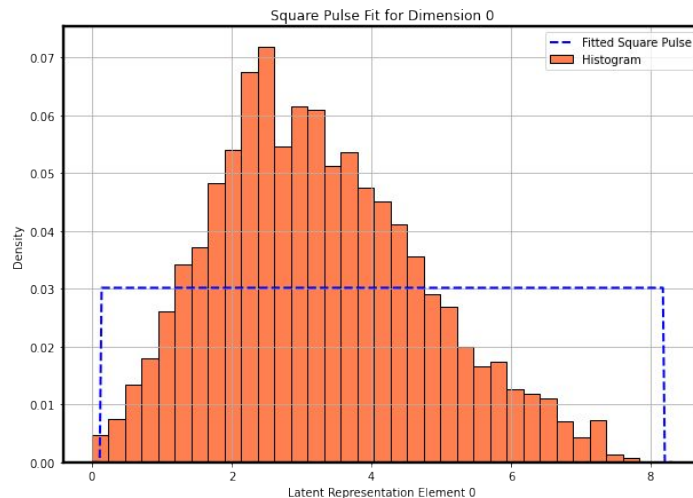
# Retrained 20 models, here are the HLT results

I tried a few different ideas:

- Entropy as described last week (using the variances of the latent space representations)
- Fitting a square pulse to the latent space histogram (one fit for each dimension)

$$\text{Metric} = (\text{length of pulse}) * (\text{MSE})$$

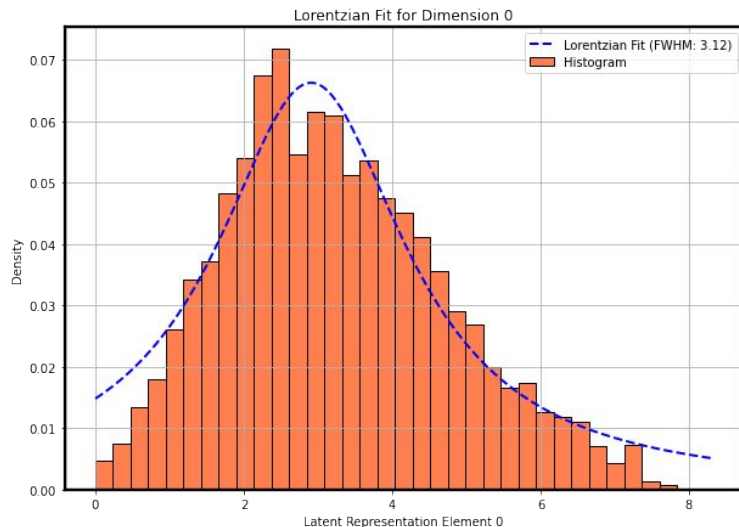
- I don't think the fitting was being done correctly
  - Is this worth spending more time on?



# Retrained 20 models, here are the HLT results

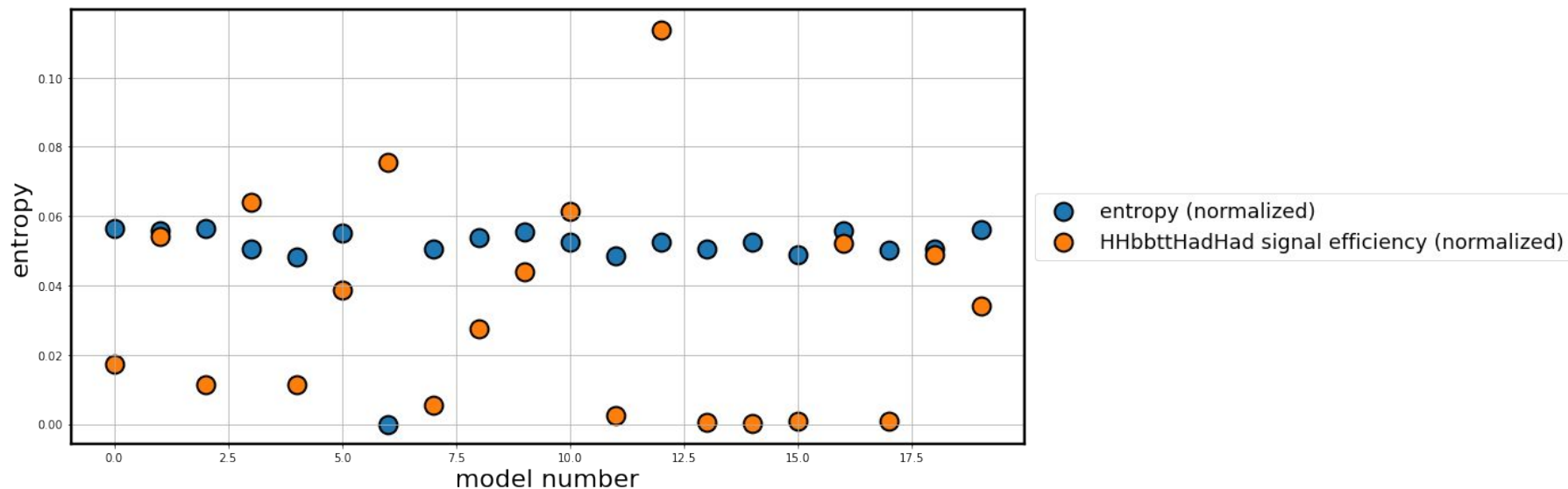
- I also tried something similar fitting a lorentzian:

$$\text{Metric} = (\text{FWHM}) * (\text{MSE})$$



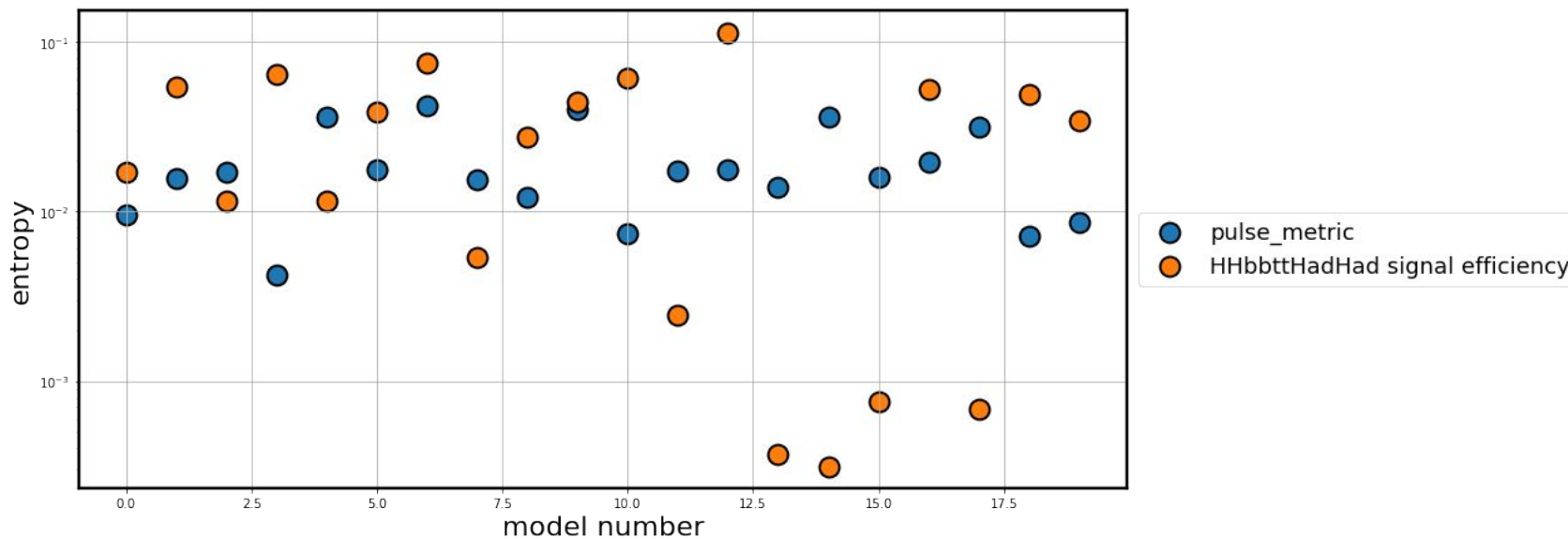
# None of these metrics mapped on to performance

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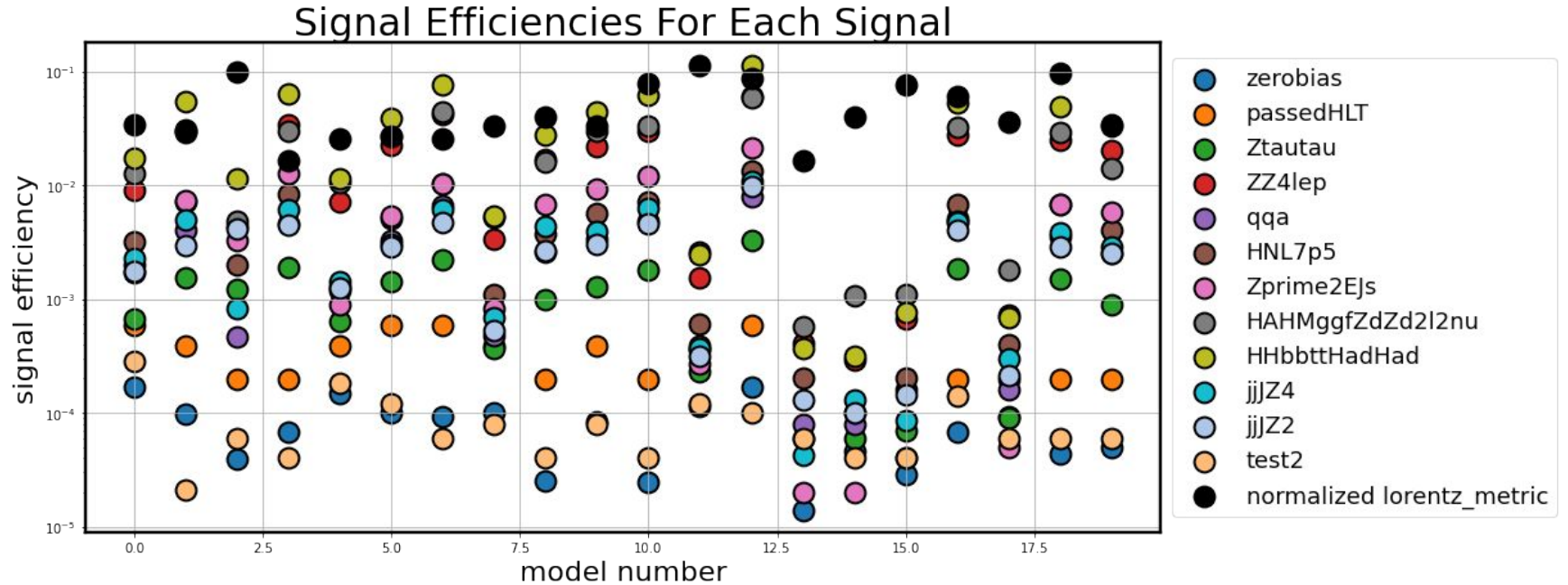


# None of these metrics mapped on to performance

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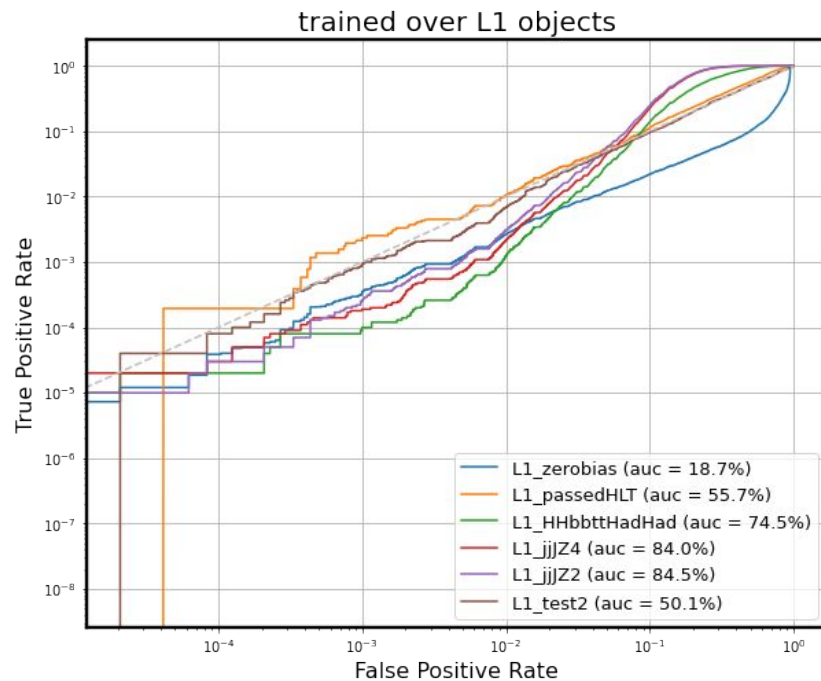
# None of these metrics mapped on to performance



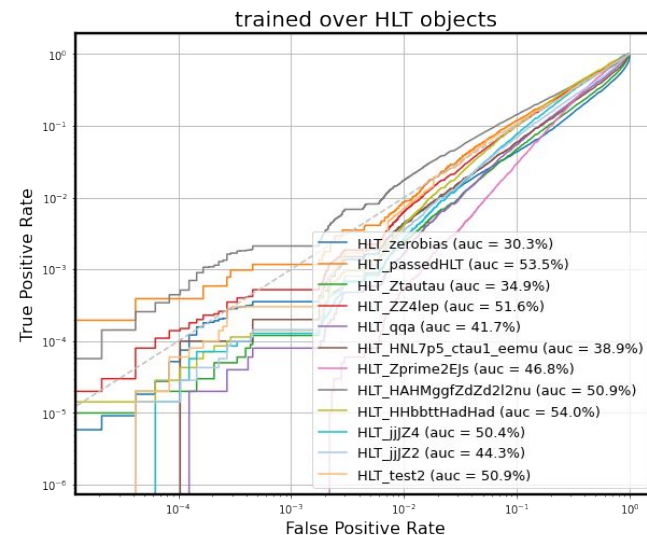
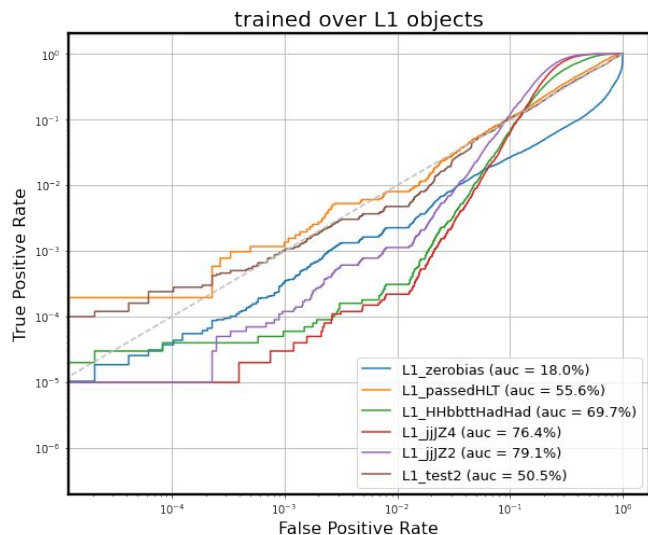


# Training with smaller latent space (2 instead of 3)

- Performance still very bad
- L1 still seems to understand the data better than HLT



# VAE instead of AE



- Tried with different latent dimensions, both KL and MSE AD score
- Was unable to get decent performance for either L1 or HLT at low FPR