

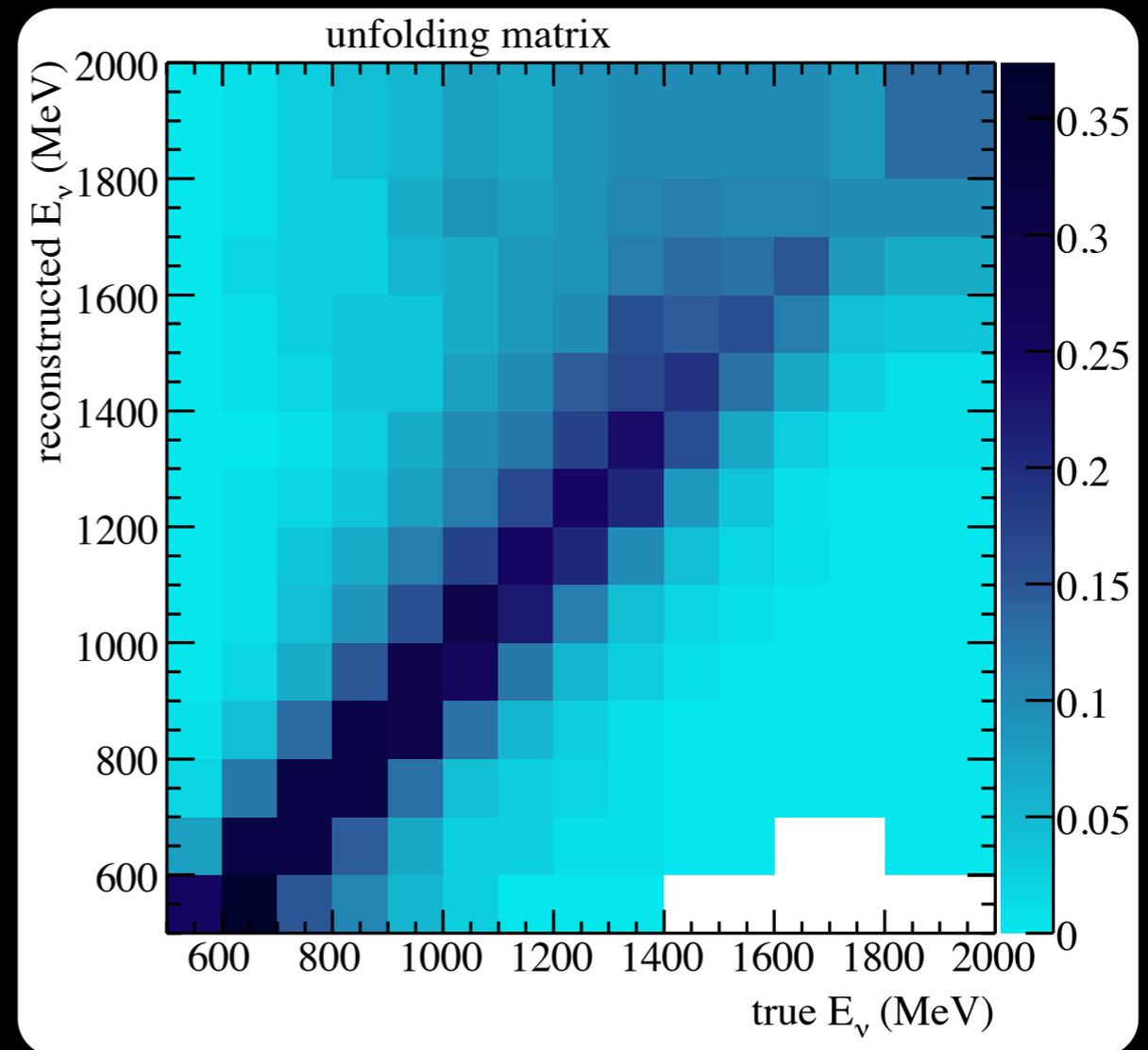
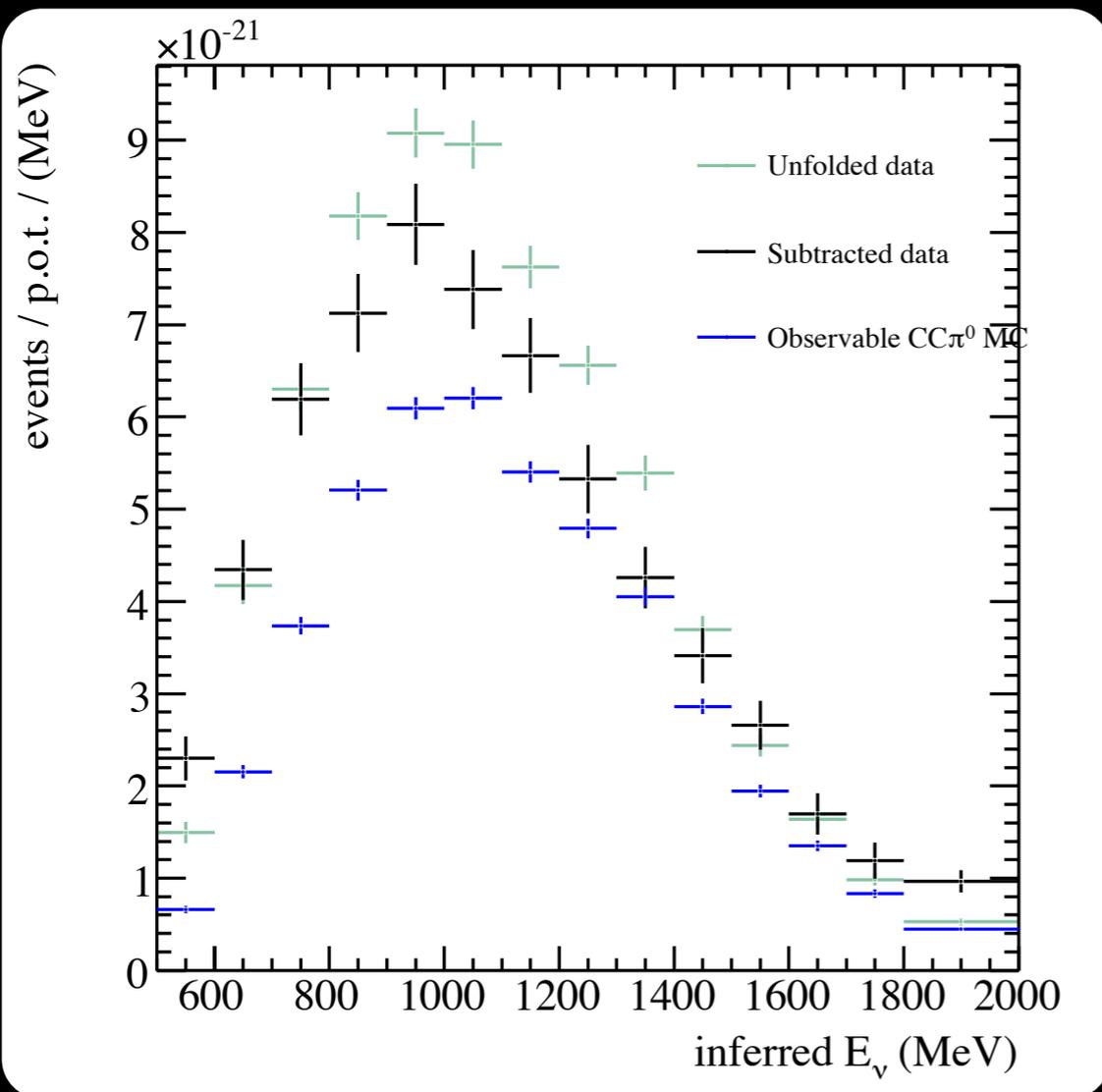
# CC $\pi^0$ update

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# Unfolding stat errors

$$V_{ij} = \sum_k^{bins} \left\{ U_{ik} \sigma_k^2(d) U_{jk} + \frac{d_k^2}{R_{ik}} U_{ik}^2 (\delta_{ij} - U_{jk}) \right\}$$

- The propagation of statistical errors leads to a non-diagonal covariance matrix with a reduction of the naive diagonal error expectation.
- I attribute this to unfolding have the effect of smoothing the statistical error.

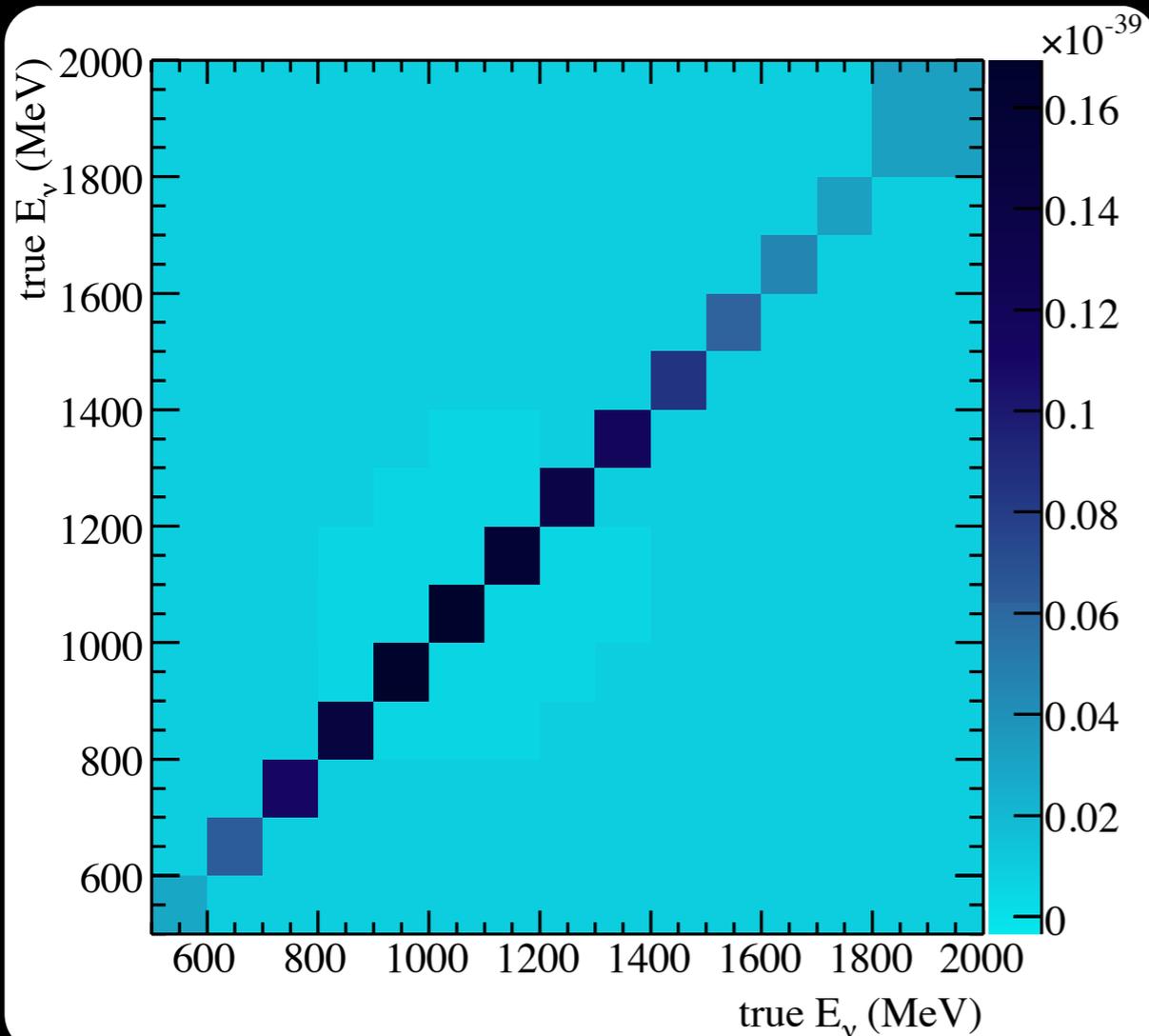


# Covariance matrix

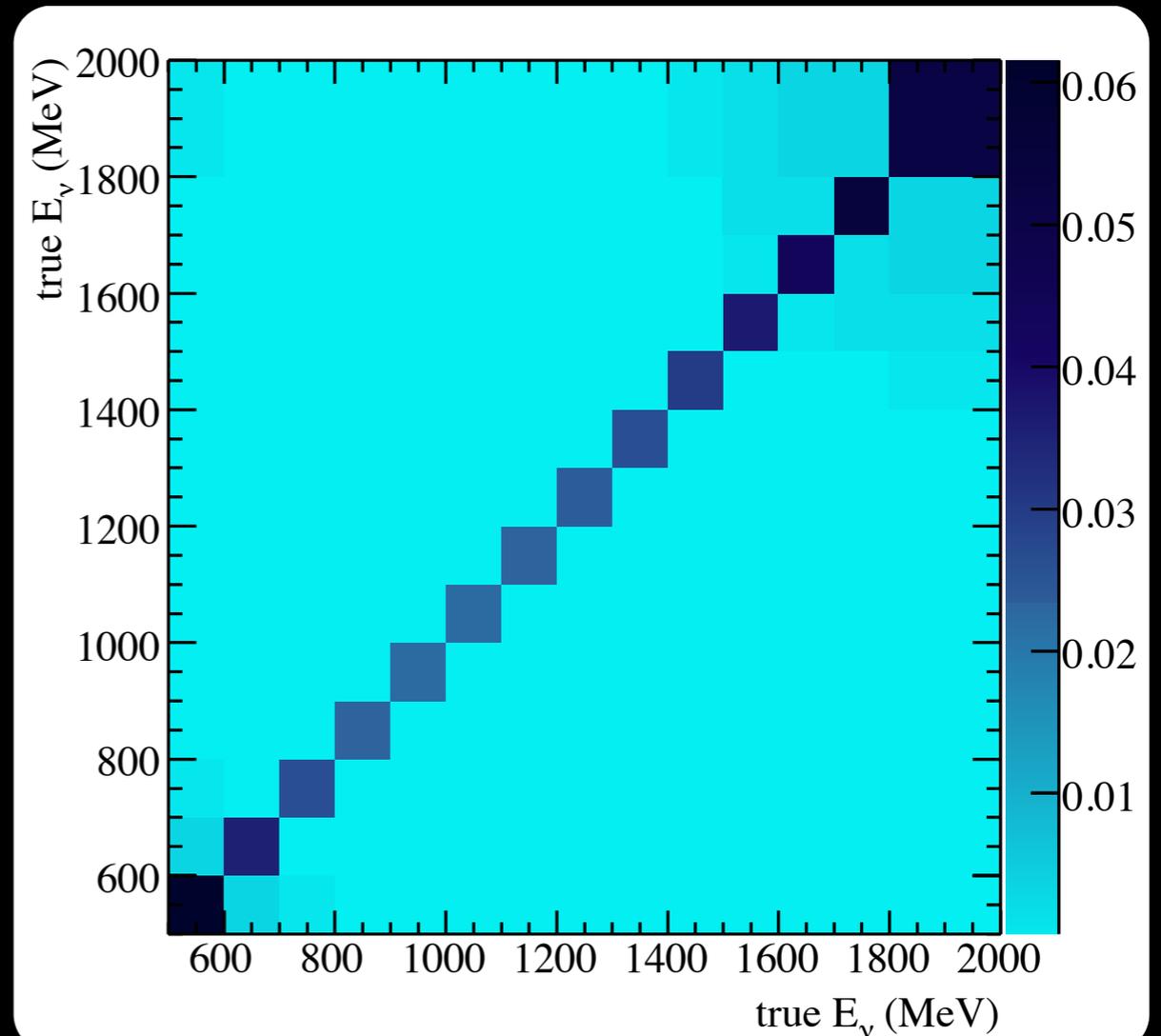
$$V_{ij} = \sum_k^{bins} \left\{ U_{ik} \sigma_k^2(d) U_{jk} + \frac{d_k^2}{R_{ik}} U_{ik}^2 (\delta_{ij} - U_{jk}) \right\}$$

- The matrix is still mostly diagonal. Off diagonal elements are almost completely dominated by the first term.
- The relative matrix is given by  $(V_{ij}/(d_i d_j))^{1/2}$  and represents the relative error.

## Covariance



## Relative error



# Systematic errors

- I'm currently learning how to use `MultisimMatrix` and hope to have those errors soon (week or two).
- OM multisims will depend on how lucky I get with condor, but I hope to have them on the same time scale.

## Fake Data

- I still plan on completing this to assess unfolding systematic errors.

## Reconstruction technote

- Not 100% complete yet (one section is still lacking).
- A draft has been sent off to the reviewers.
- Their comments will determine how much more time I put into this.