

# DUNEPRISM LINEAR COMBINATIONS

UPDATE

DUNEPRISM PHONE MEETING

NOVEMBER 3<sup>RD</sup> 2017



Stony Brook University

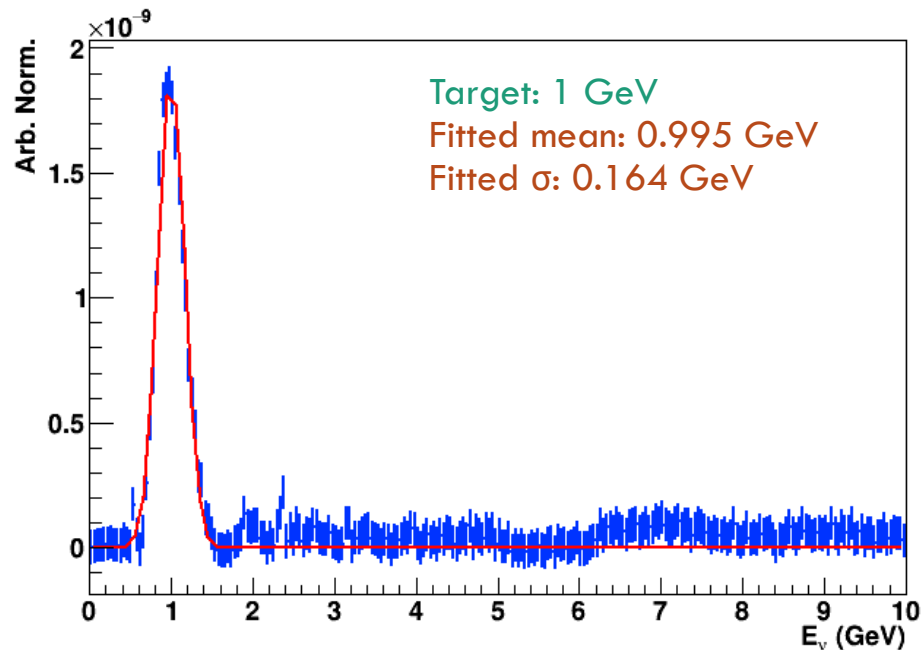
Cristóvão Vilela

# UPDATES

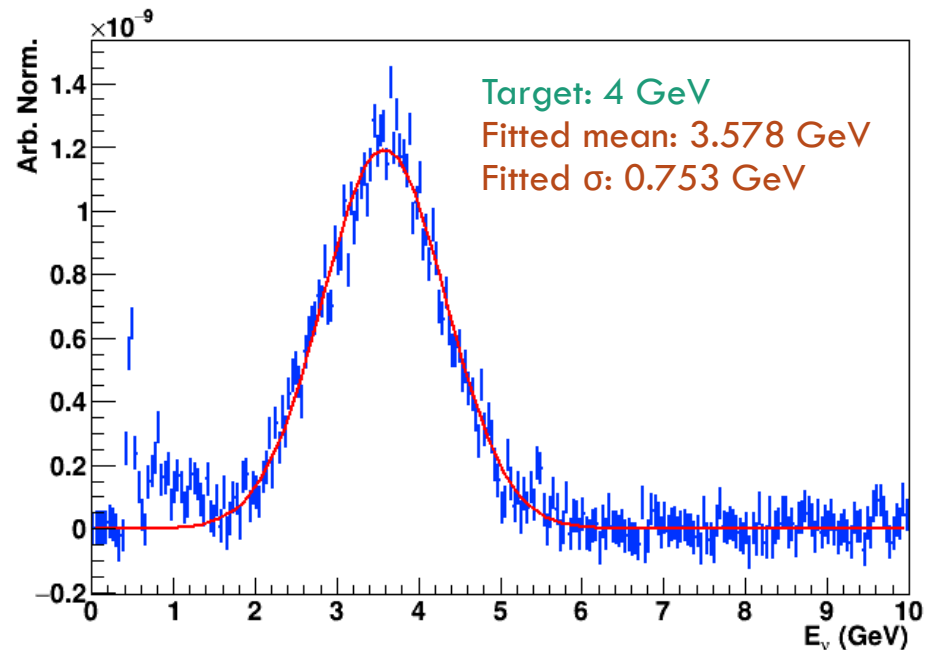
- Now looking at a more realistic range of off-axis angles:  $[0, 3.5]^\circ$ 
  - Compared to  $[0, 6]^\circ$  used for last meeting's plots
- Found a bug in the Gaussian fits: regularization was only being applied up to  $3^\circ$ . For more off-axis angles, coefficients were completely unconstrained.
  - Probably not a big deal.
  - Bug not present in oscillated spectrum fits.
- Started fitting to spectra generated with different sets of oscillation parameters.
  - Fits seem highly sensitive to energy range – often don't converge.
  - Still trying to work this out...

# GAUSSIAN FITS: $[0, 6]^\circ$

- Try to get Gaussian fits with means between 0.5 and 6.0 GeV with a 10%  $\sigma$ .



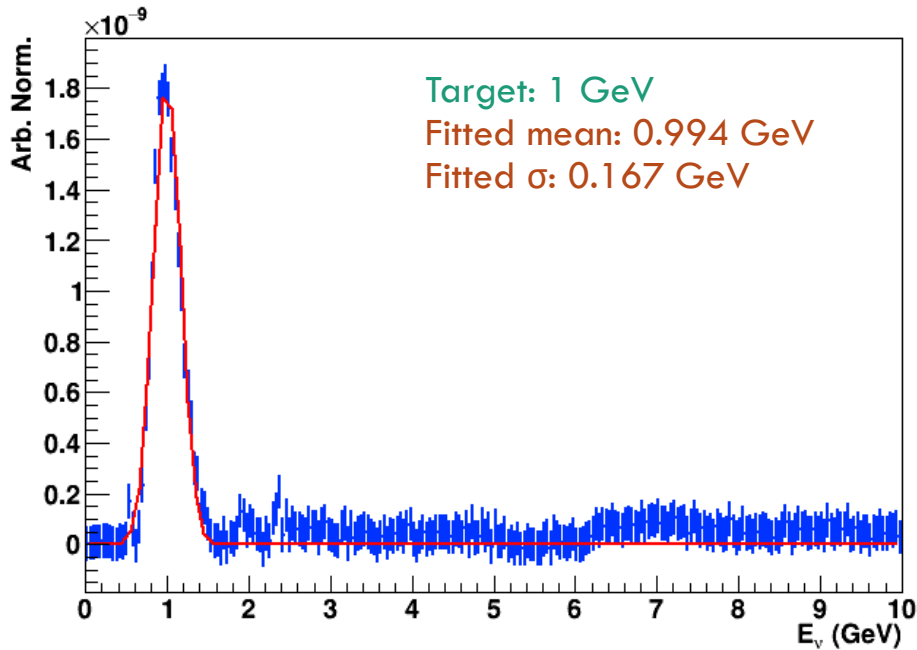
Very nice fits for low mean energies.



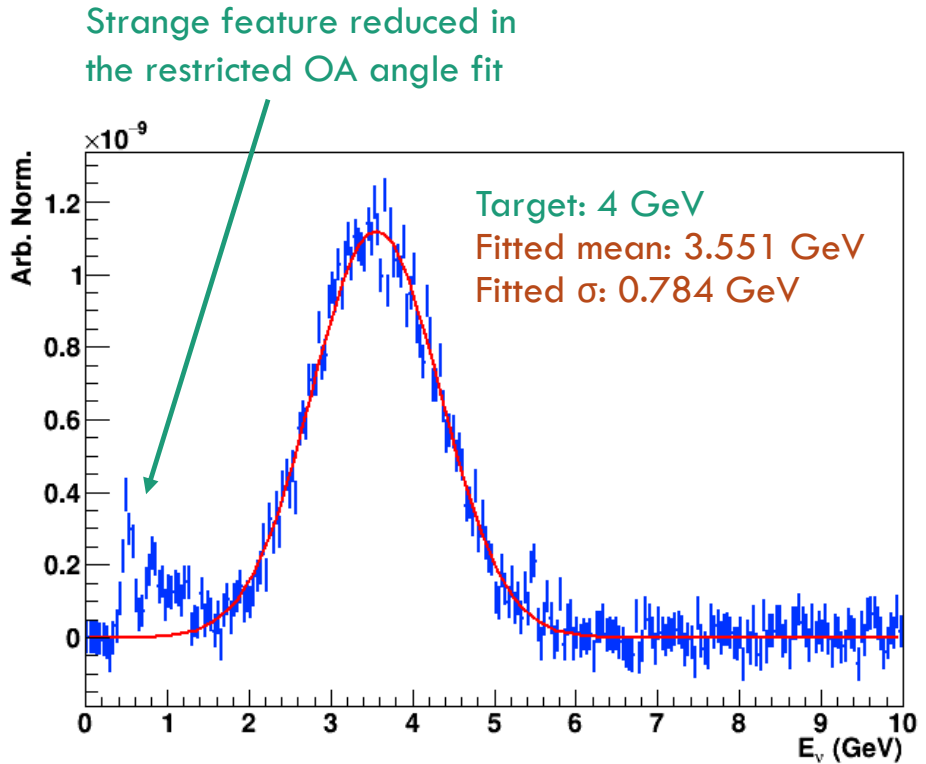
Fits start breaking down at  $\sim 3.5$  GeV.  
In this case flux still looks Gaussian,  
but target mean is badly missed.

# GAUSSIAN FITS: $[0, 3.5]^\circ$

- Try to get Gaussian fits with means between 0.5 and 6.0 GeV with a 10%  $\sigma$ .

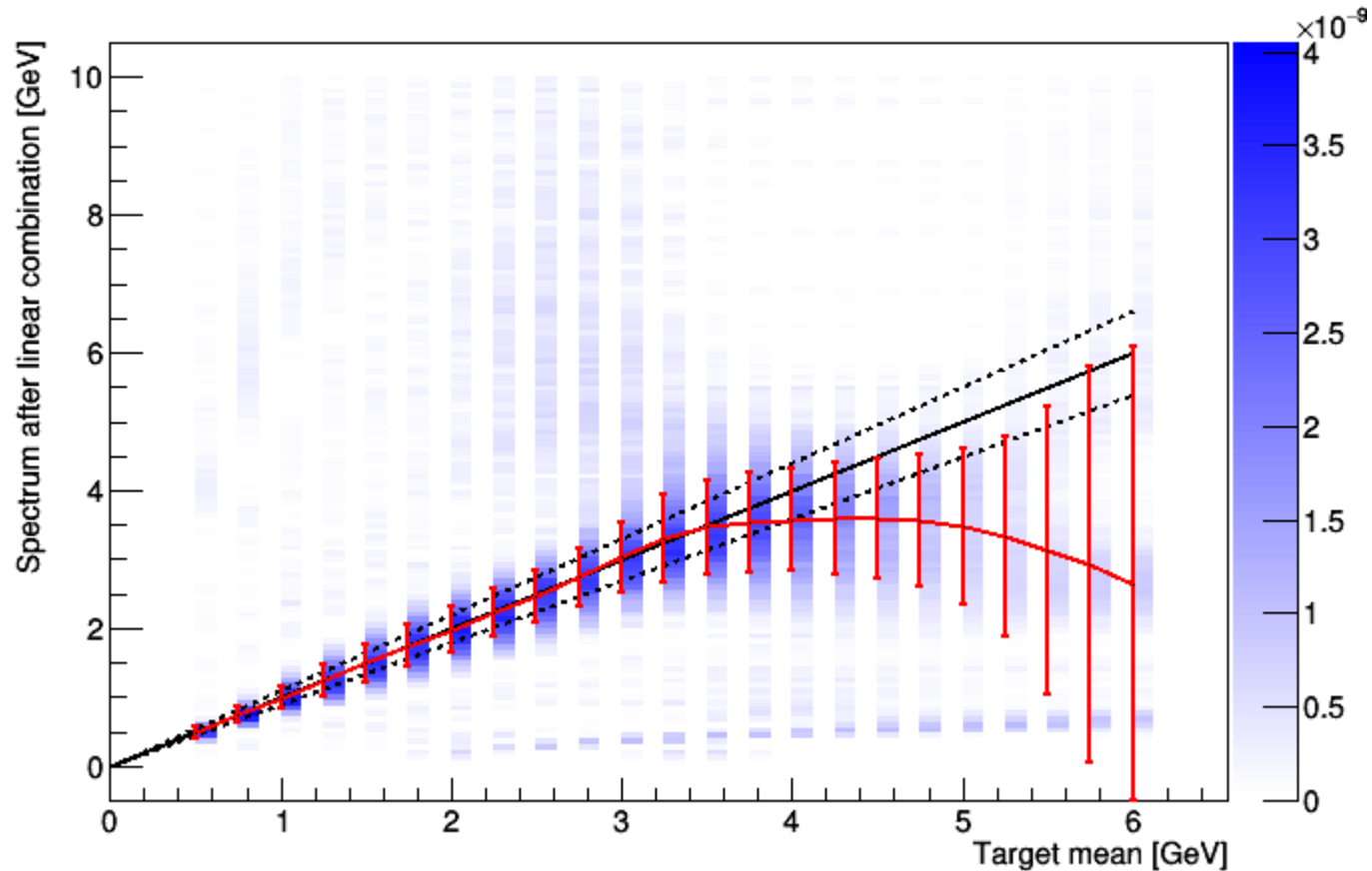


Very nice fits for low mean energies.



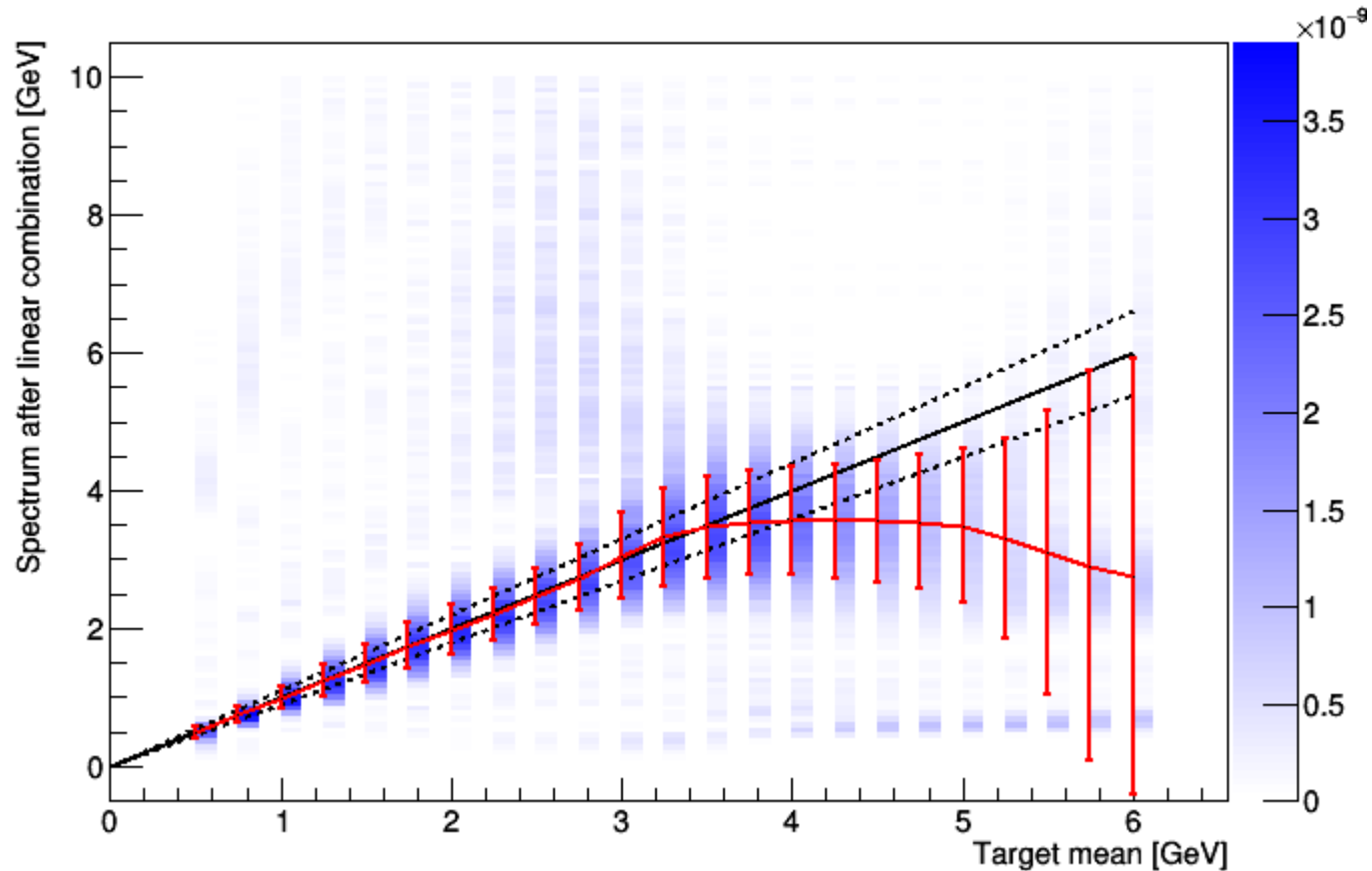
Fits start breaking down at  $\sim 3.5$  GeV. In this case flux still looks Gaussian, but target mean is badly missed.

# GAUSSIAN FITS: $[0, 6]^\circ$



- Target Gaussian parameters in black, fitted in red.
- Indicates we might be able to resolve features up to  $\sim 3.5$  GeV.

# GAUSSIAN FITS: $[0, 3.5]^\circ$



- Target Gaussian parameters in black, fitted in red.
- Indicates we might be able to resolve features up to  $\sim 3.5$  GeV.