Analysis Meeting

February 22, 2005

Database Testing

- Still waiting for Jing to send me the calibration constants.
- 3.3 GeV database at $9°$
  - Shifts at the target only 1-2 mm, so the shifts in the focal plane should be on the same order.
  - Looking closer at ϕ_{fp}, there are shifts at the focal plane.
  - Tim is working on a correction based off the carbon $9°$ data.

Shoulder at 2.68 GeV

- Made a cut on focal plane.
- Events come from downstream and large angles.
- Shoulder occurs close to the edge of the acceptance of the database.

Began writing optics technical note.

Duality NMR Analysis

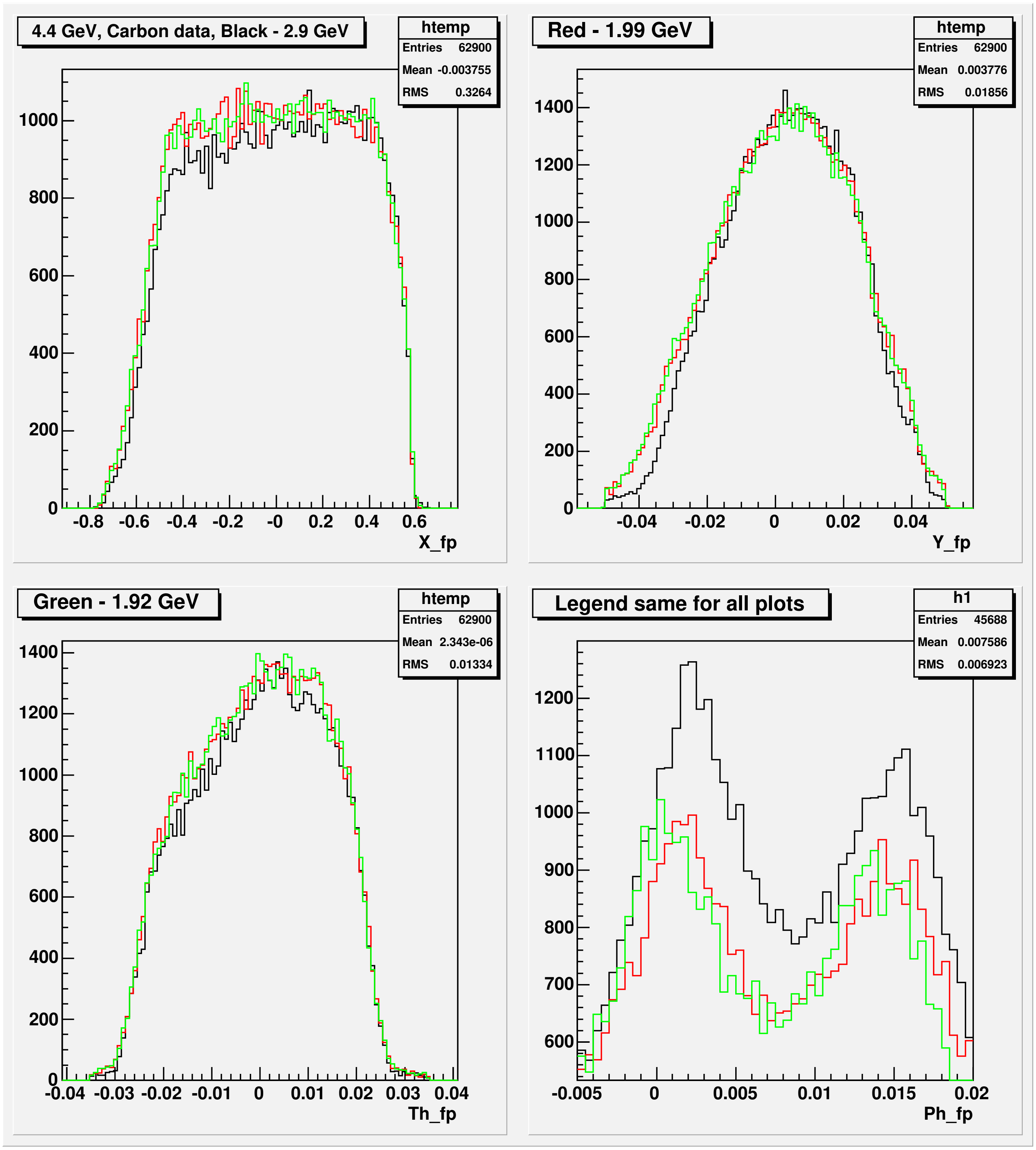
- Used Kevin's watershape generator code to determine signal shape corrections for Duality.
- Duality H1(2.5 Vrms) = 83.1 mG
- Longitudinal Gradients: Duke (7.6 mG/cm), Exodus (7.8 mG/cm)
- Gradient from field map ranges from 5.2 to 2 mG/cm across pick-up coils.

- Lock-in Time Constant: $\tau = 30$ ms
- Effect of the time constant and gradient widen NMR signal to 90 mG and reduce the height by 5%.
- Signal width matches NMR signal widths from fits.
- Corrections comparable between up and down sweeps.
- For saGDH, I can try to use the field maps to correct for the gradients.

To Do:

- Look at optics at 1.09 and 2.1 GeV with good PID constants.
- Continue working on tech note.
- Determine corrections to ^{3}He signal. (should be comparable to water)
- Determine uncertainty for flux calculation.

Figure 1: Focal plane variables for 4.4 GeV carbon data.



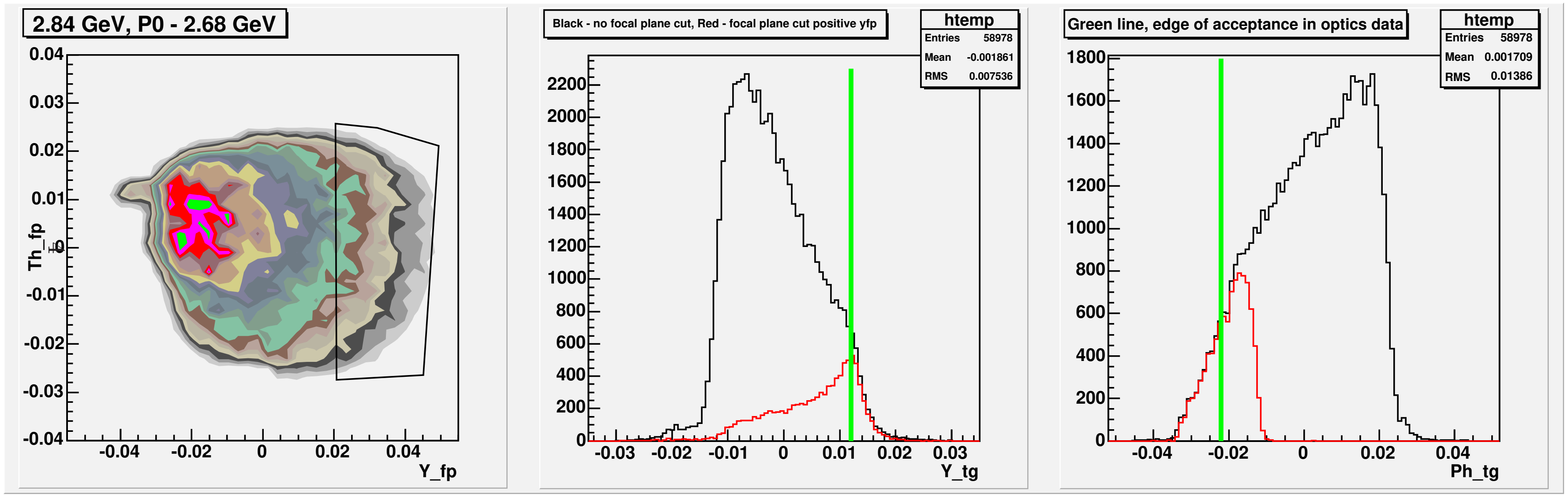


Figure 2: Target variables with cut on focal plane at 2.68 GeV.

Figure 3: Contour plot of focal plane for optics.

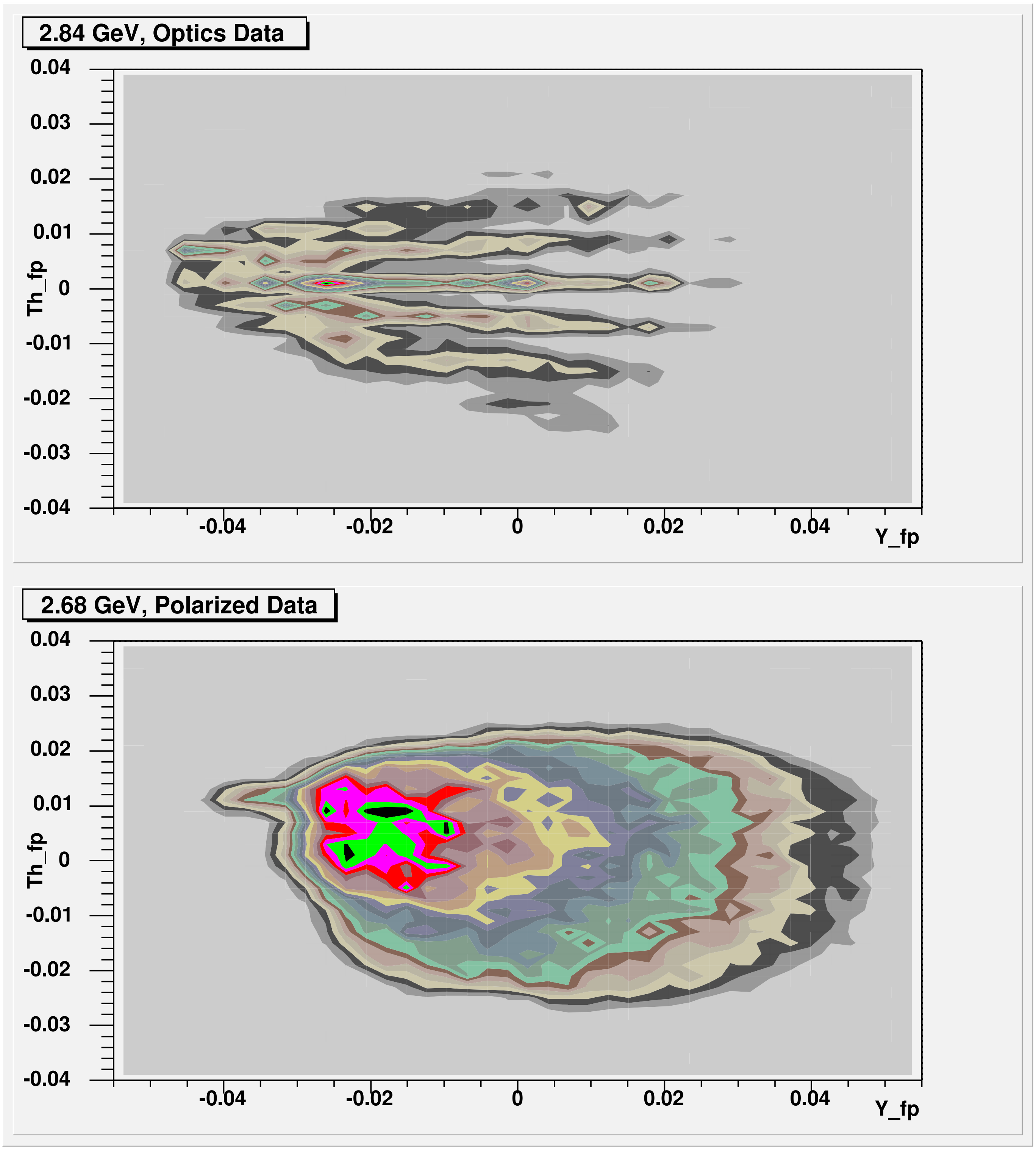


Figure 4: Lock-in Time constant effect on water signal.

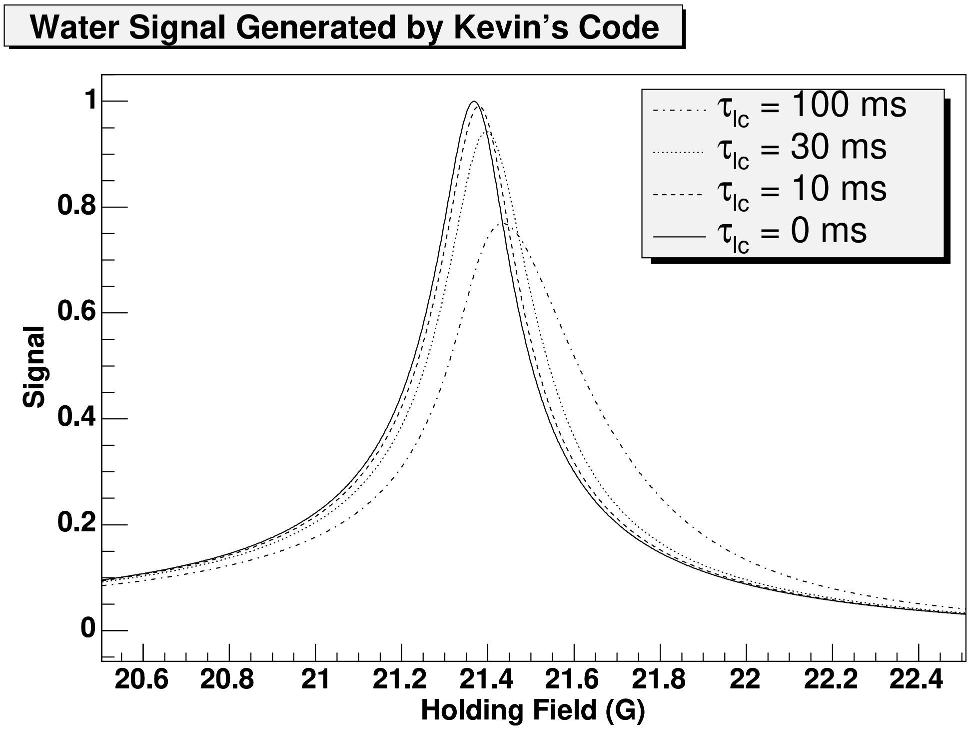


Figure 5: Longituninal gradient effect on water signal.

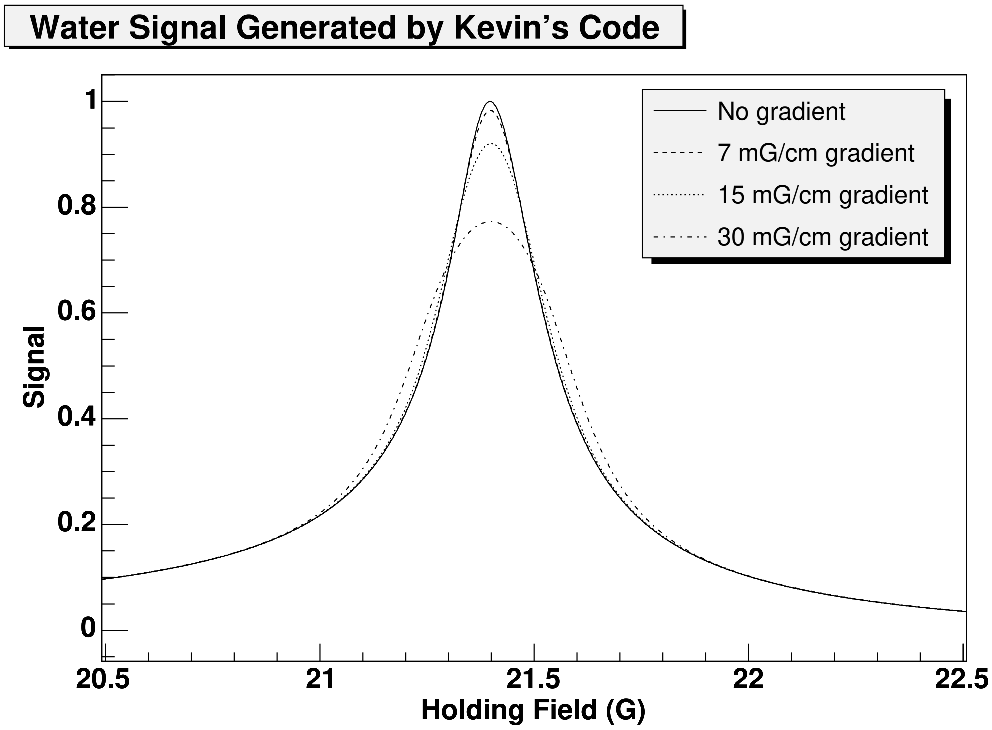


Figure 6: Contour plot of focal plane at 2.84 GeV.

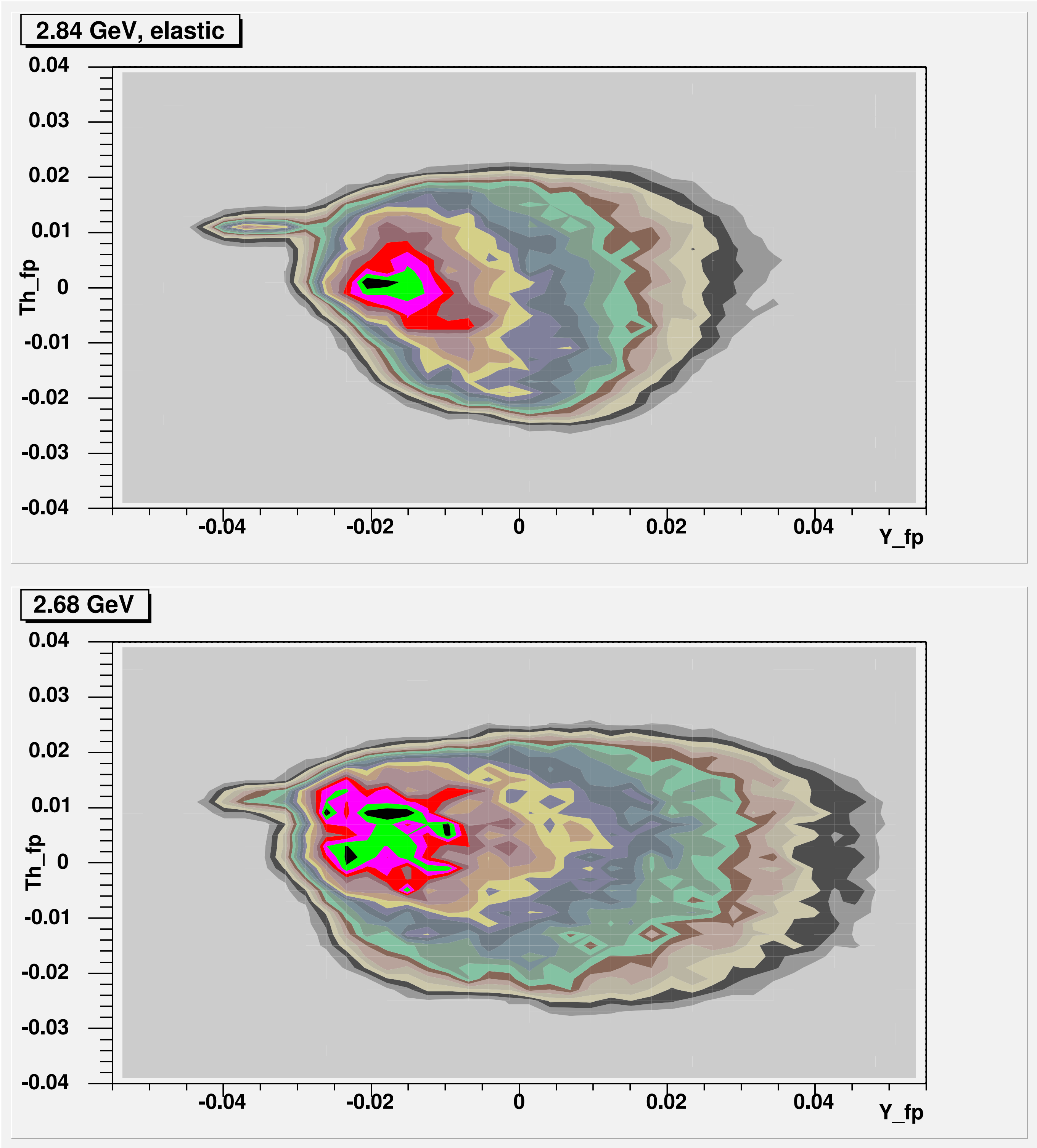


Figure 7: Contour plot of focal plane at 2.48 GeV.