CDF Kinematic TOP Analysis using the $\mathcal{H}$ variable

$$\mathcal{H} = Et(\ell) + MET + \sum_{jets} Et(jets)$$

- A simple, global variable that is $\approx \sqrt{\hat{s}}$ (or M_T) of the $t\bar{t}$ system.
- Also sensitive to *non* b-tagged top events.
- Provides an independent crosscheck of the top mass and cross section.

- Fig a. Control Sample:
  - 3 jets: $Et(j) \geq 8\ GeV$ and $\eta_{det} < 2.4$
  - Veto jet 4: $Et(j) \geq 8\ GeV$ and $\eta_{det} < 2.4$
- Fig b. Low Threshold Data:
  - $\geq$ 4 jets: $Et(j) \geq 8\ GeV$ and $\eta_{det} < 2.4$
- Fig c. Signal Sample: (PRL Mass analysis cuts)
  - 3 jets: $Et(j) \geq 15\ GeV$ and $\eta_{det} < 2.0$
  - $\geq$ Jet 4 $Et(j) \geq 8\ GeV$ and $\eta_{det} < 2.4$