

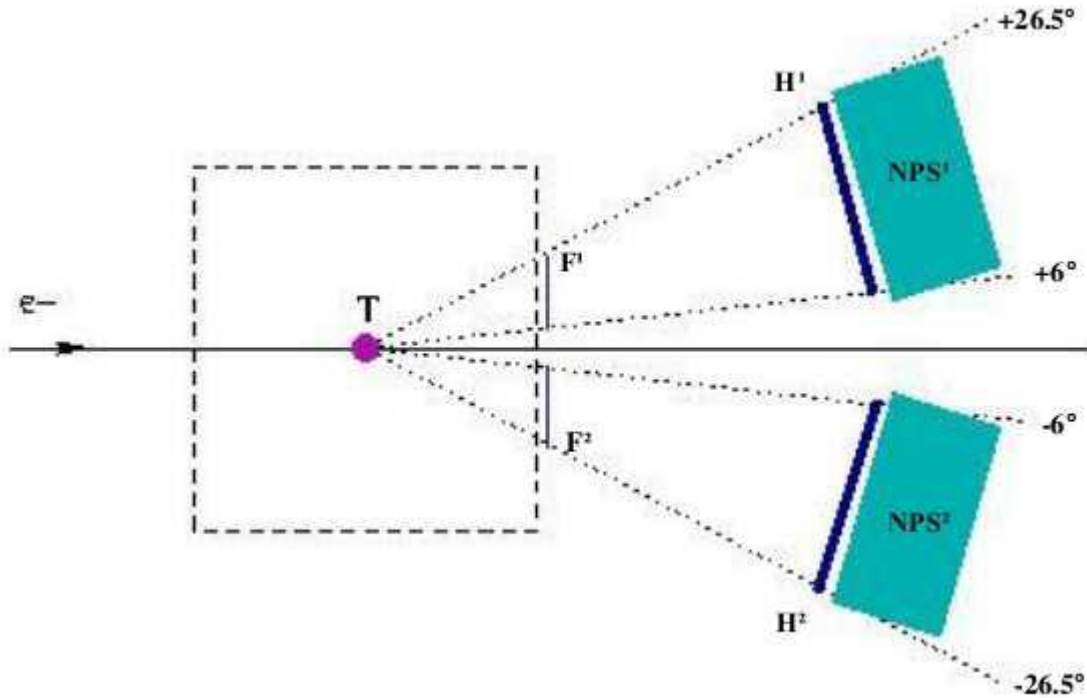
TCS setup

(optimization, continuation)

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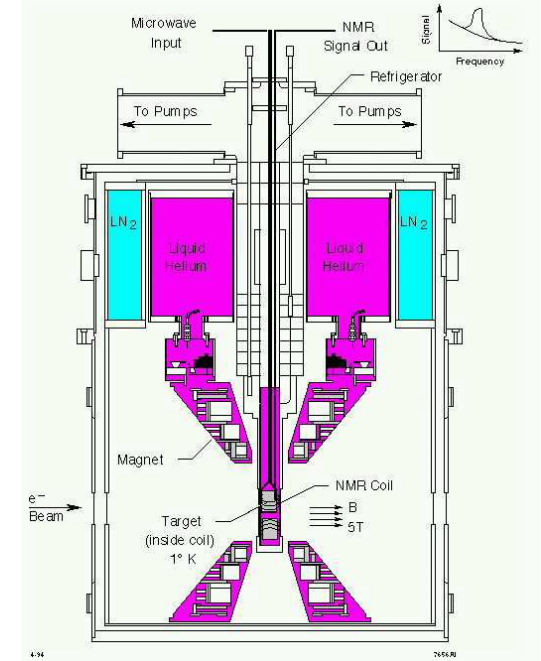
June 28, 2016

TCS setup



Beam pipe limit: $|\theta| > 6^\circ$ (vertically).
Calorimeters at 150 cm from target.

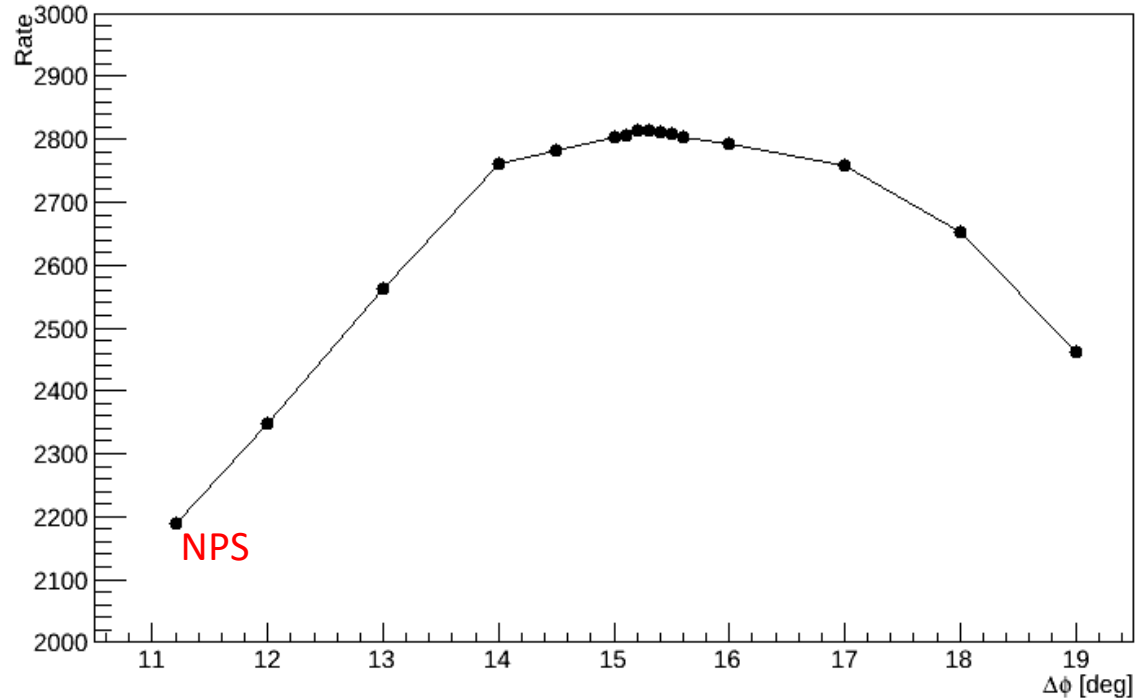
TCS target, upstream view



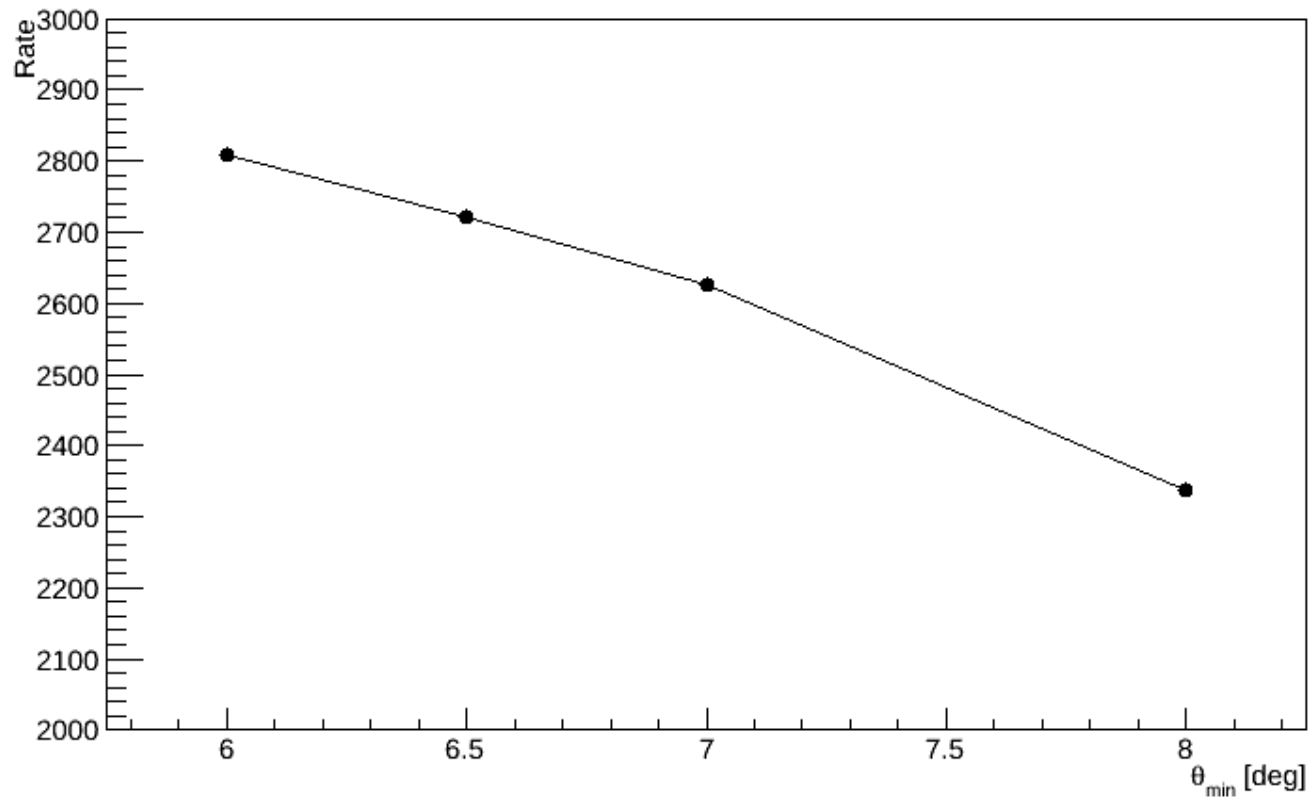
Magnet poles limit $|\varphi| < 17^\circ$.
Windows: $|\varphi| < 18^\circ$ (hor.),
 $|\theta| < 26.5^\circ$ (vrt.).

Calorimeters' aspect ratio

- Calorimeters at 150 cm
- Assume NPS cross sect. area (~1116 blocks, $\Omega=184$ msr)
- Rectangular shape
- $\theta_{\min}=6^\circ$ (vertical angle)
- Optimize vs $\Delta\phi$ (half of horizontal angle)
- Optimum at $\Delta\phi=15.3^\circ$,
 $\theta=19.1^\circ$
- Active area: 40x25 blocks
- Total: 42x27 = 1134 blocks

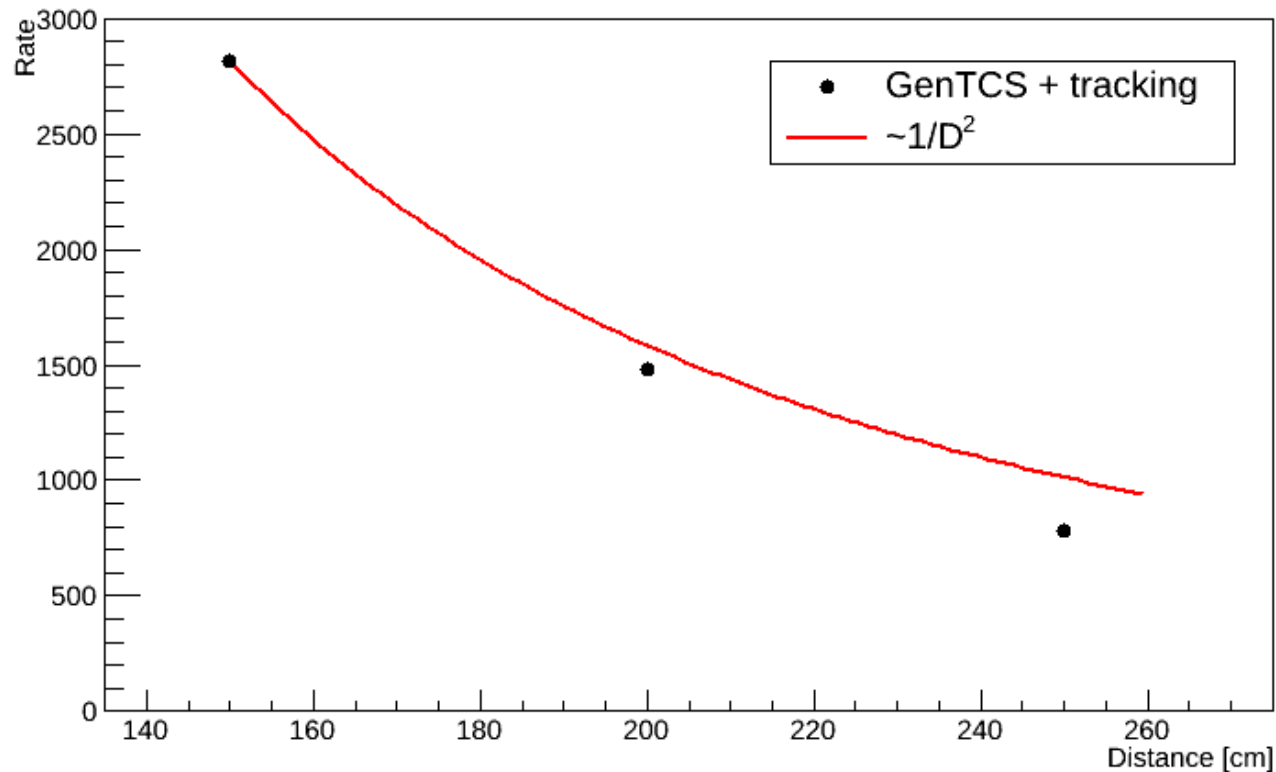


Calorimeters' vertical position



Optimum at minimum angle from beam pipe.

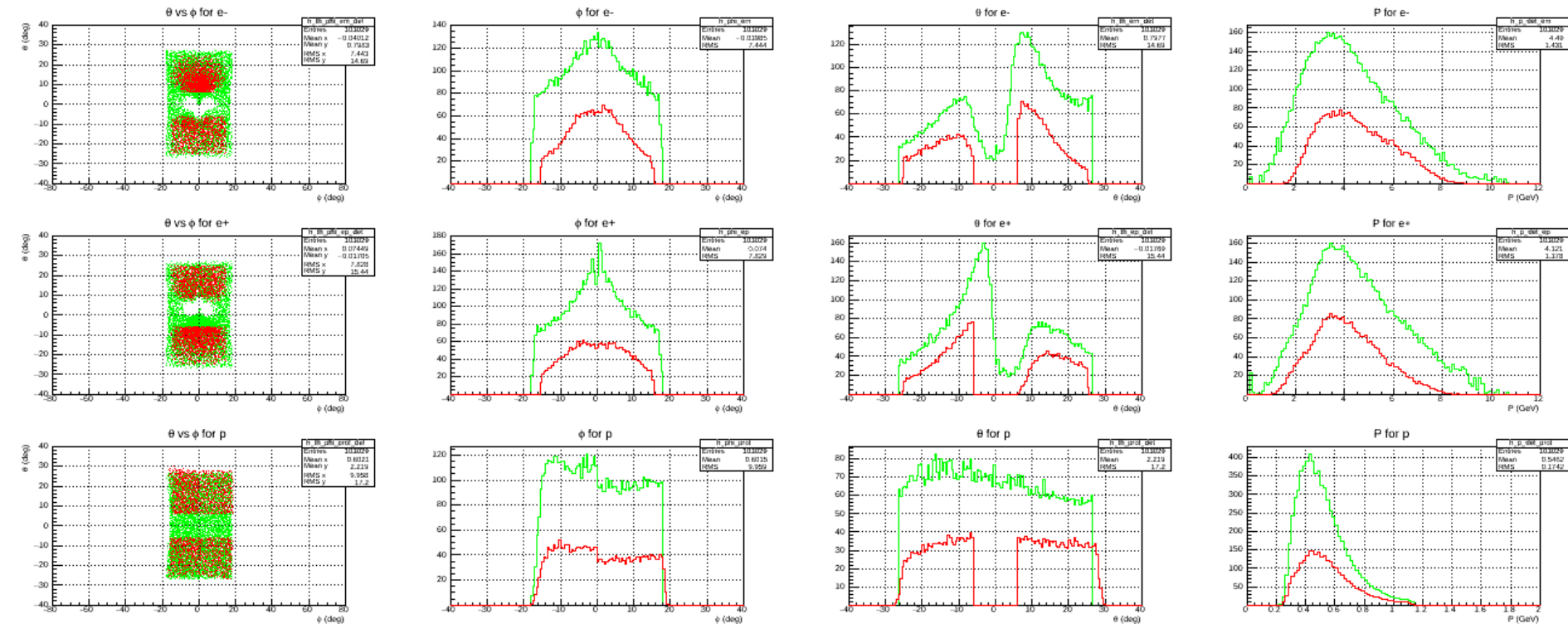
Distance from target



Angular acceptance of Proton Detector optimized for $D = 150$ cm and kept constant.
Calorimeter's cross section kept constant.

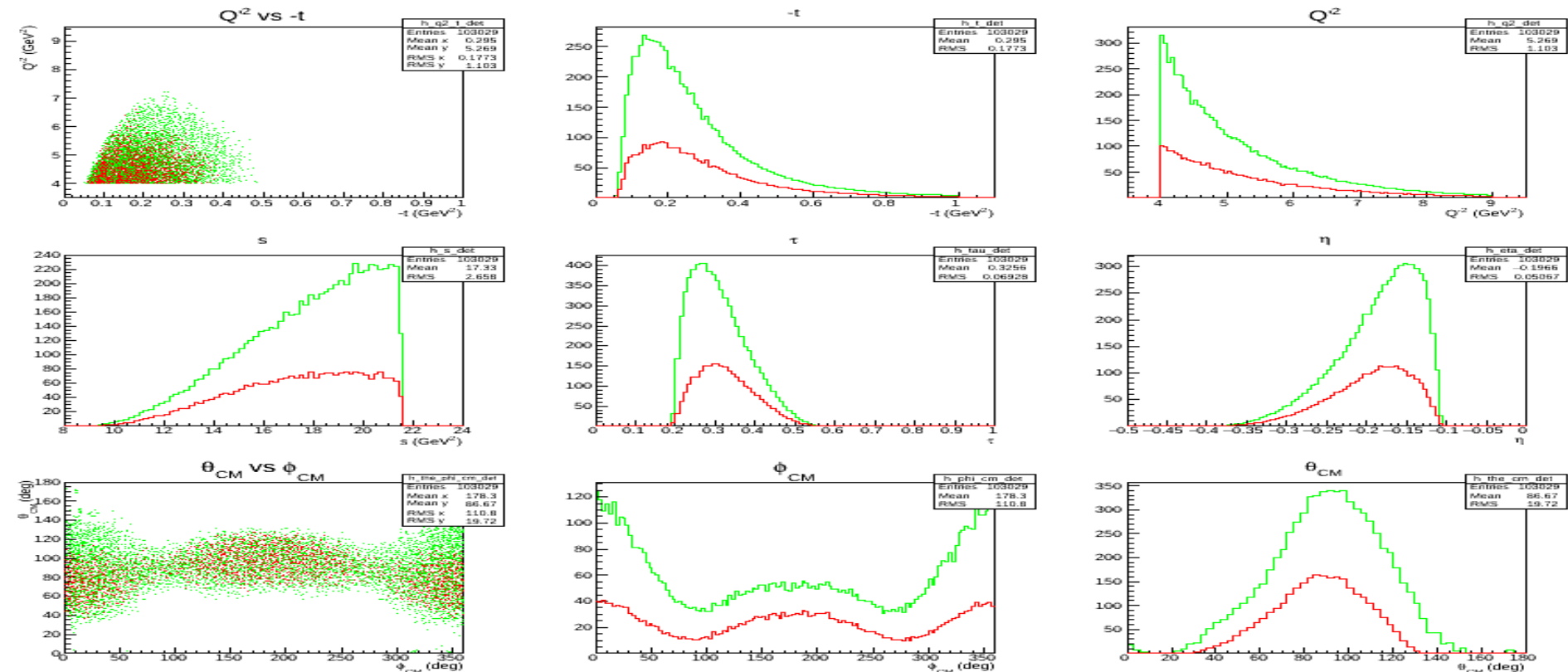
Rates dropping faster than naïve expectation.

Acceptance at 150 cm



Green: e^+ , e^- and proton exiting scattering chamber's window. **Red:** detected triple coincident events.
40% of events accepted.

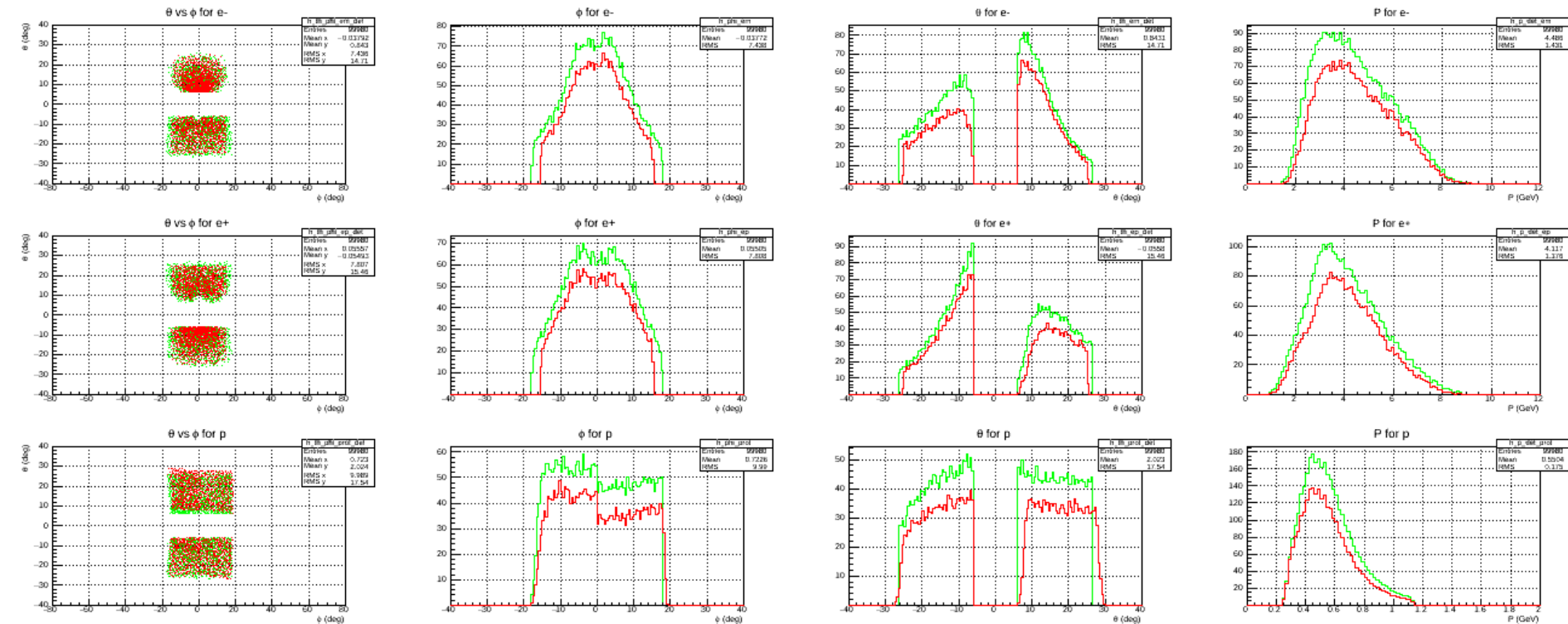
Kinematic coverage at 150 cm



Green: e+, e- and proton exiting scattering chamber's window. **Red:** detected triple coincident events.

Backup slides

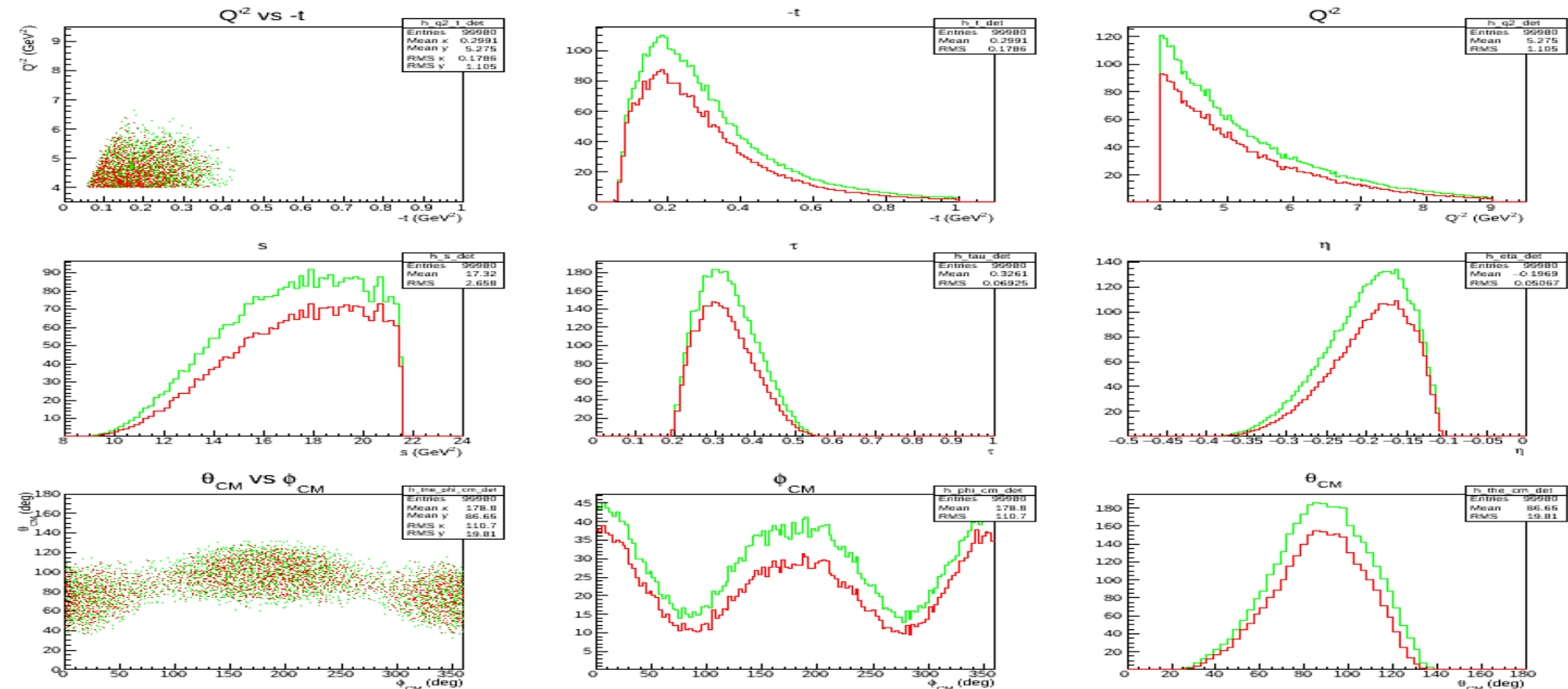
Acceptance at 150 cm



Green: e^+ , e^- and proton exiting scattering chamber's *up* and *down* windows.

Red: detected triple coincident events. 77% of events accepted.

Kinematic coverage at 150 cm



Green: e+, e- and proton exiting scattering chamber's *up* and *down* windows.

Red: detected triple coincident events.