STAR Collaboration Metting 2002
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Brookhaven National Laboratory

FTPC Detector Update

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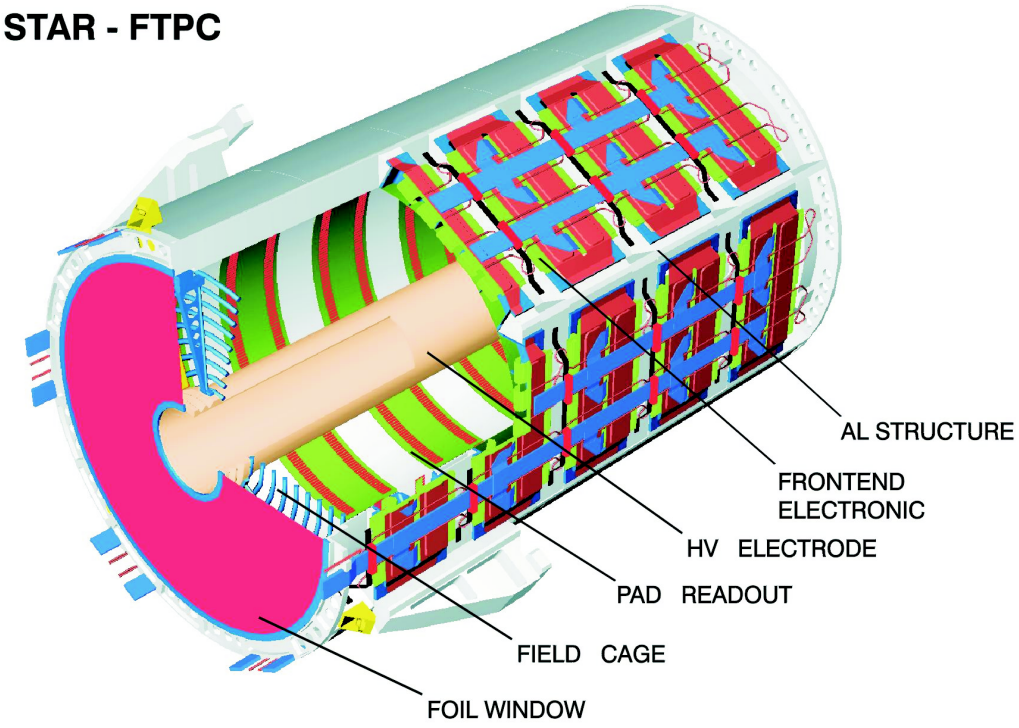
Overview

- Physics objectives
- Detector layout
- Radial drift
- Clusters and Tracks
- Preliminary Results

Physics objectives

- extend STAR charged particle acceptance by region $2.5 < |\eta| < 4.0$
- charged particle and net proton $(h^+ - h^-)$ spectra, K^0_s and Λ production, anisotropic flow, fluctuations of $\langle p_t \rangle$, DCC search

Detector layout

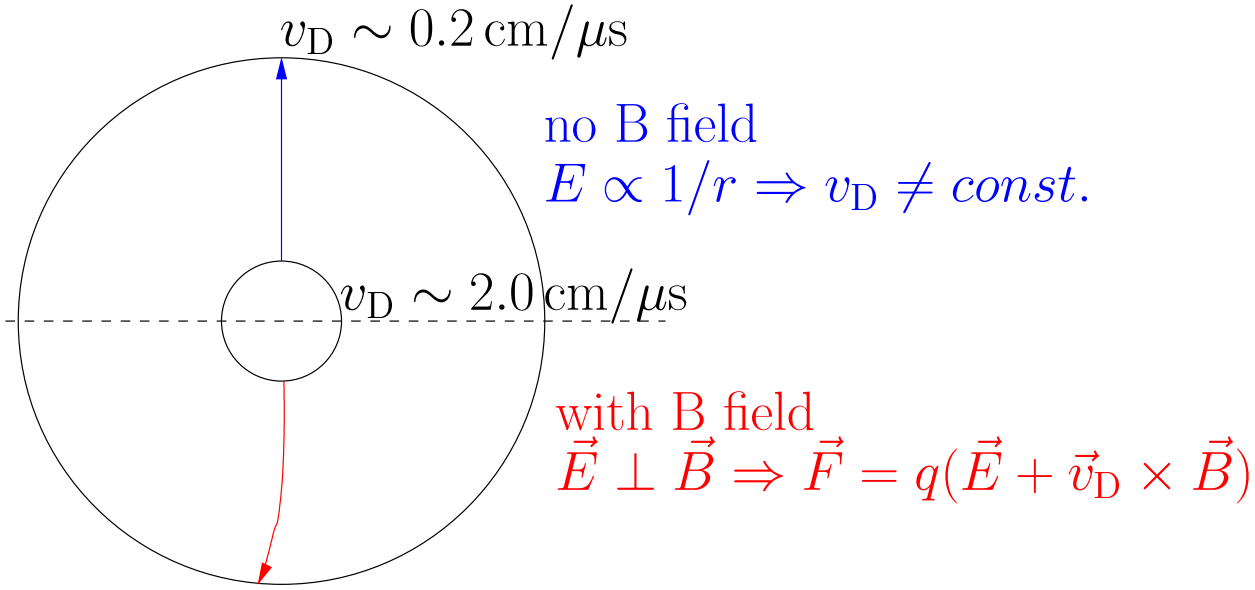


- $2.5 < |\eta| < 4.0$
- 2 FTPCs
- 10 rows with 960 pads each $\Rightarrow$ 19 200 channels
- read out in 256 time bins
- Gas Argon/CO_2 (50 %/50 %)

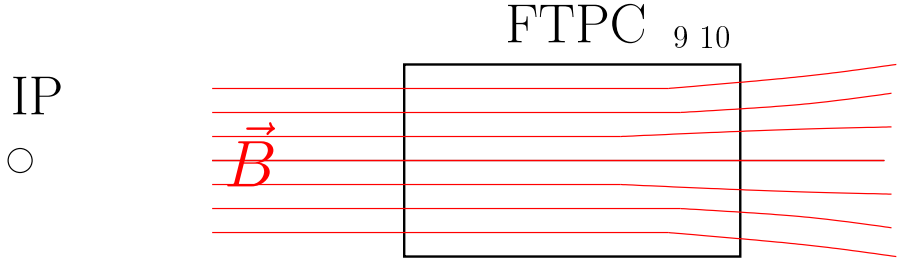
- radial electron drift perpendicular to magnetic field
- optimization of 2–track resolution

Specific problems due to radial drift

a)

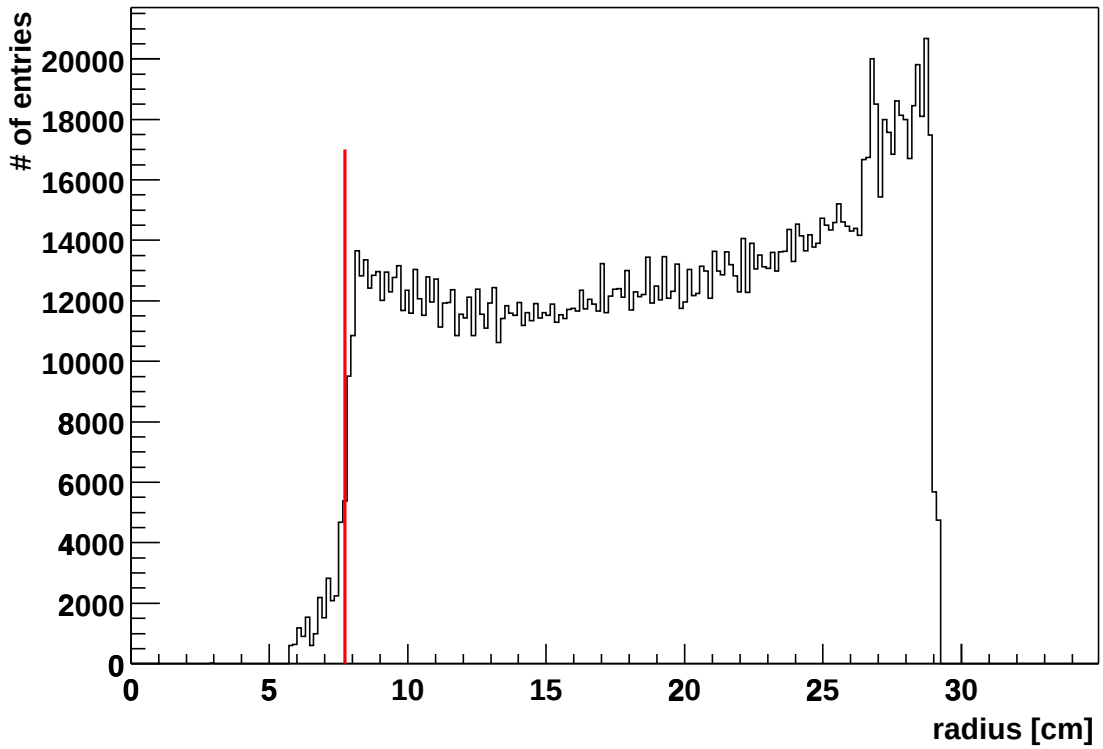


b)



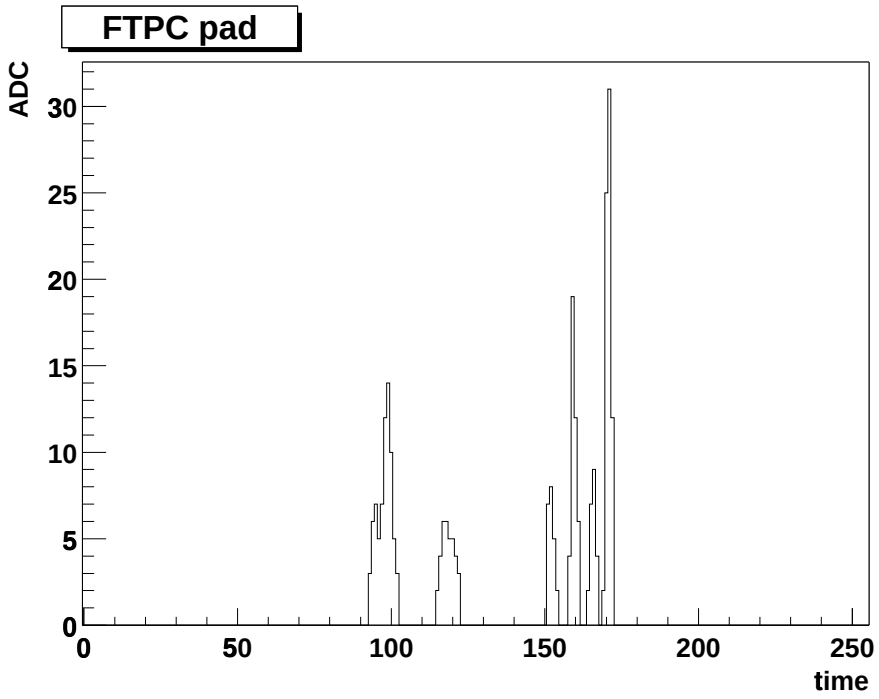
- drift velocity $\vec{v_D}$ has to be known to about 0.1 % accuracy
- MAGBOLTZ calculations
- independent checks:
  - charge step
  - drift velocity monitors

Charge step

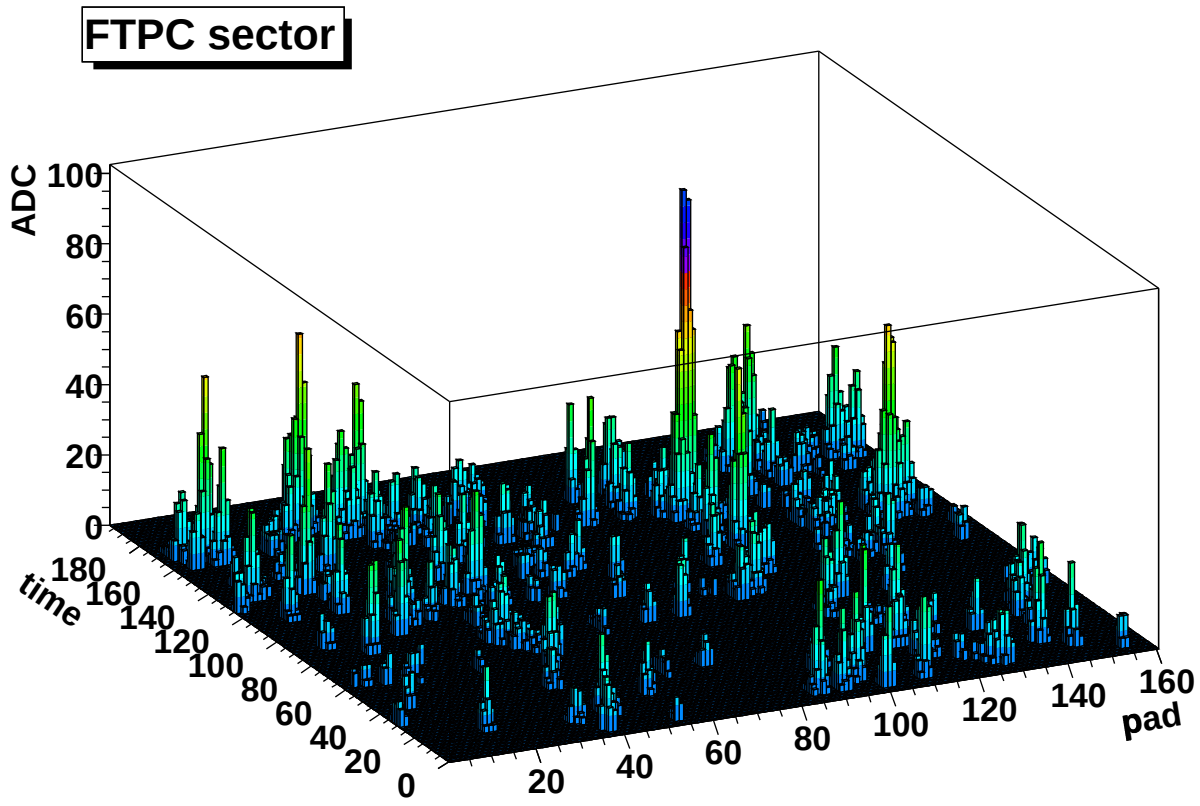


- calibration procedures (MAGBOLTZ with adjusted gas mixture, temperatures and pressure; t_0) brings back edge to where it should be
- Laser runs to improve this (in progress)

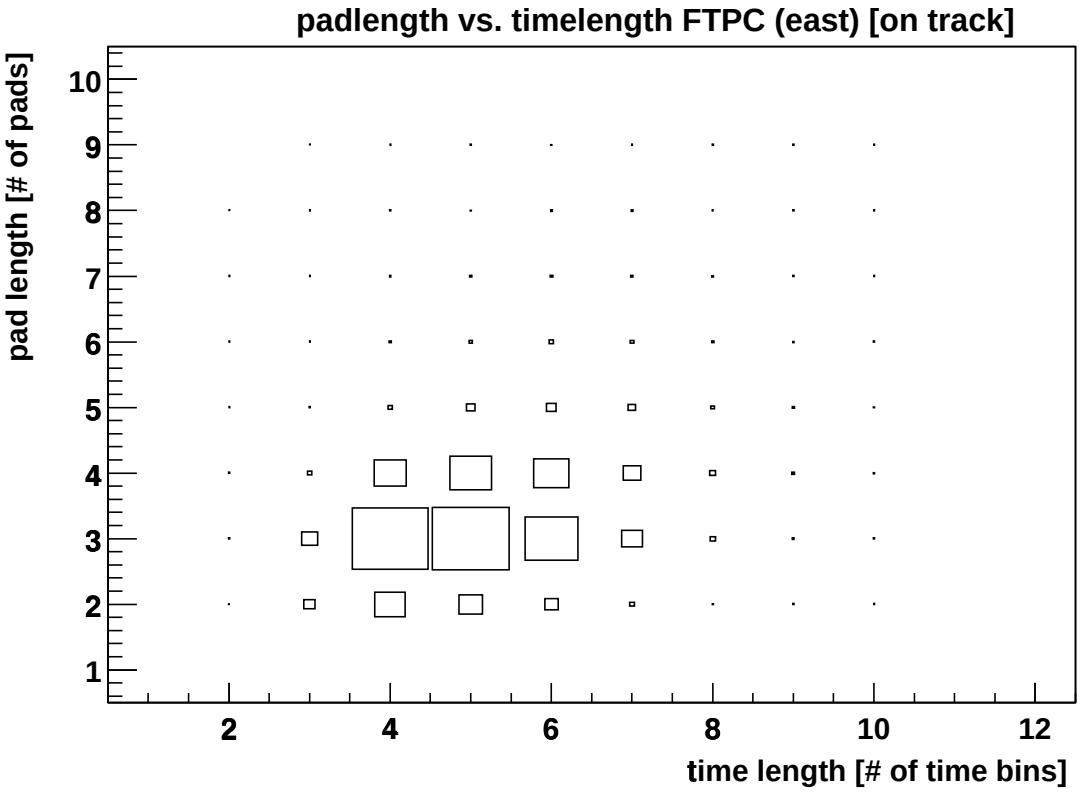
Track signals on one pad

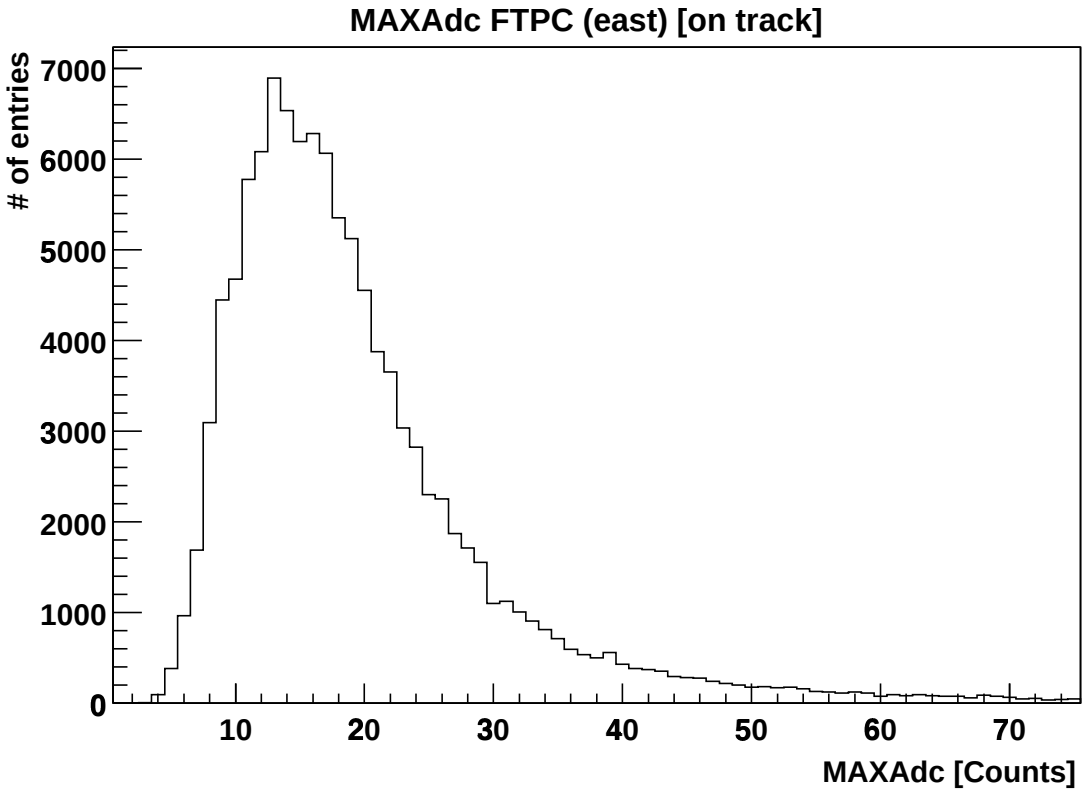


Track signals in 1/6 of pad ring

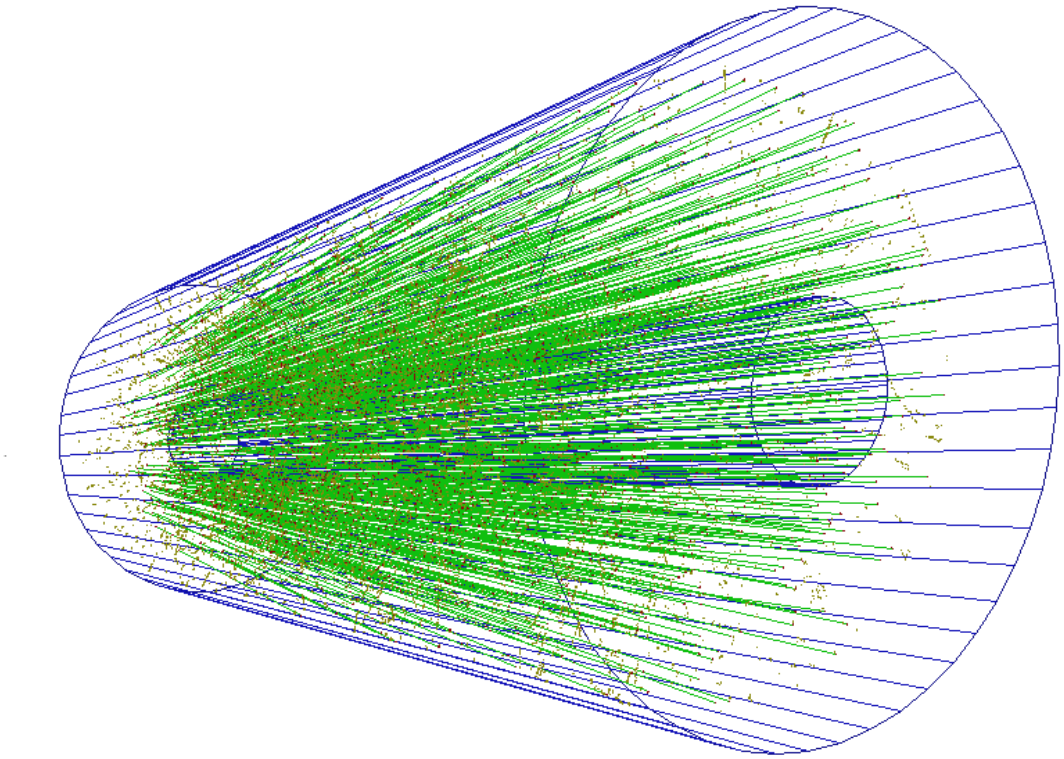


Cluster shapes





Reconstructed FTPC tracks in a central AuAu collision ($\approx$ 500 per FTPC)



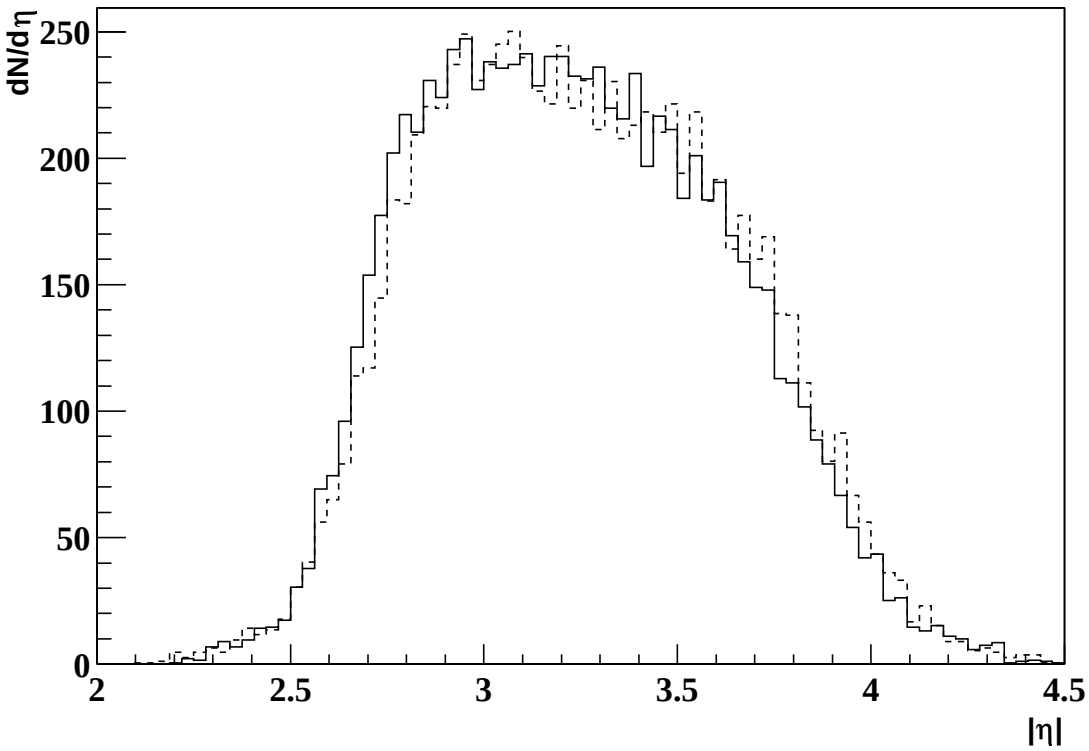
FTPC events taken (gas ok, all sectors switched on)

	Full field	Half field	Zero field
Hadronic central	1 569 039	7 079	1 236
Hadronic minbias	89 589		
pp MinBias	15 053 757		76 300

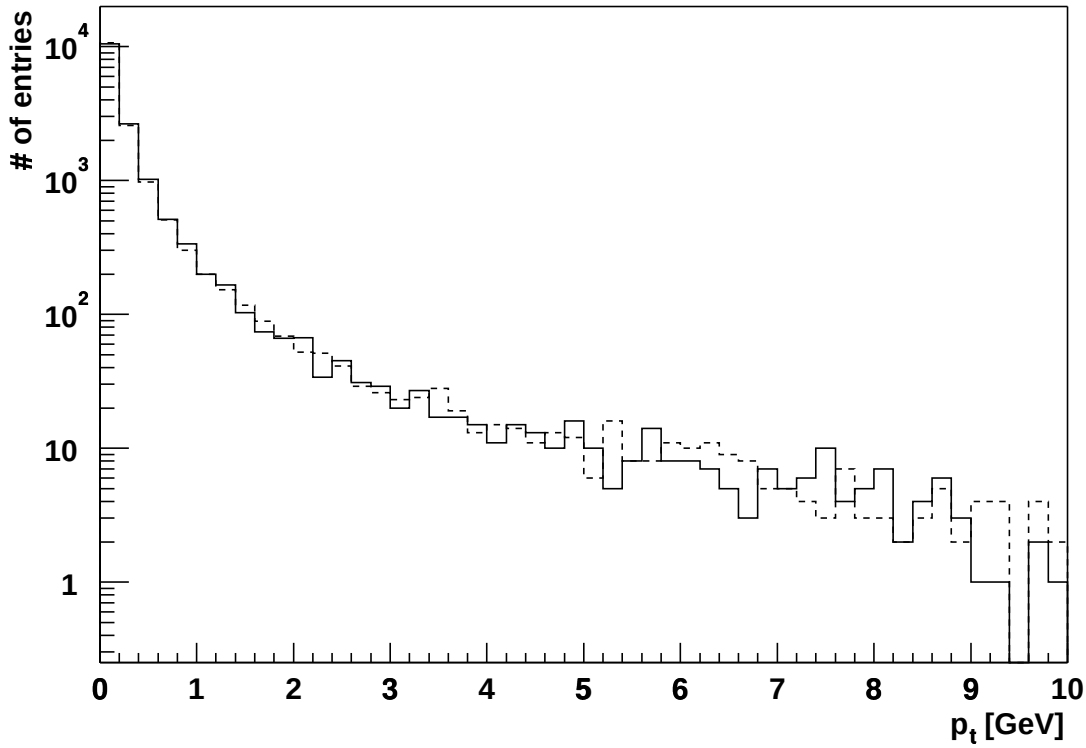
Hardware status

- about 5% of the channels have problems (high noise or dead)
- FEE boards will be exchanged

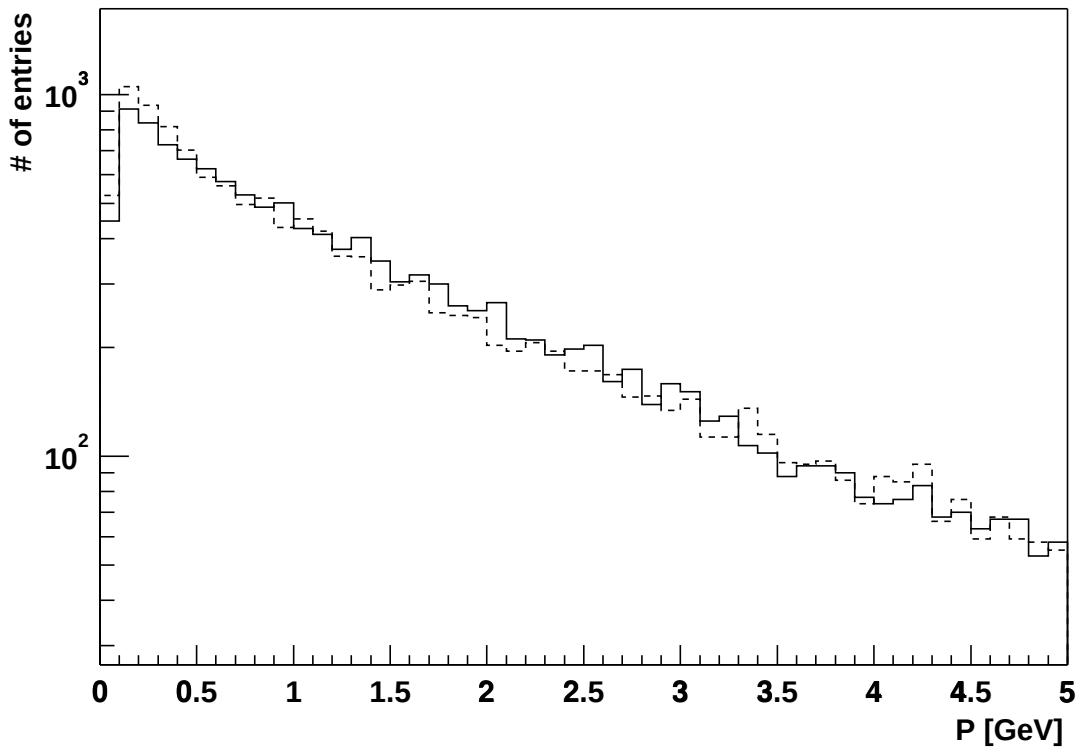
Pseudorapidity distribution (preliminary)



p_t distribution (preliminary)



momentum distribution (preliminary)



Outlook

- first set of data (min bias; 90k) reconstructed
- further calibration and reiteration on parameters (cluster finding, tracking) needed
- After another cycle of reconstruction we will be ready for physics!