FTS Hough Tracking Status
Sep. 2016

Requirements to the FtsTracking

- **Input:**
  - Straw hits + isochrone rings from PandaRoot
  - Magnetic field map
  - Geometry description
- Execution as/via **FairTask**
- **Output:**
  - PndTrackCand (or PndTrack) objects.
  - Collection of hits belonging to one track
  - Plus an estimate on the track momentum

Benchmarks

- pure **single muon** sample (proof of principle)

- **multi-track** samples from muons, pions, electrons, protons, kaons (performance scan)

- Background reactions from **DPM** (or FTF)

- **Physics**, e.g. Lambda decays (physics interest)

Important remarks

- **Distribution** of code via SVN. Starting in the development branch is encouraged.

  subversion.gsi.de/trac/fairroot/browser/pandaroot

- **Documentation** on the Panda Wiki.

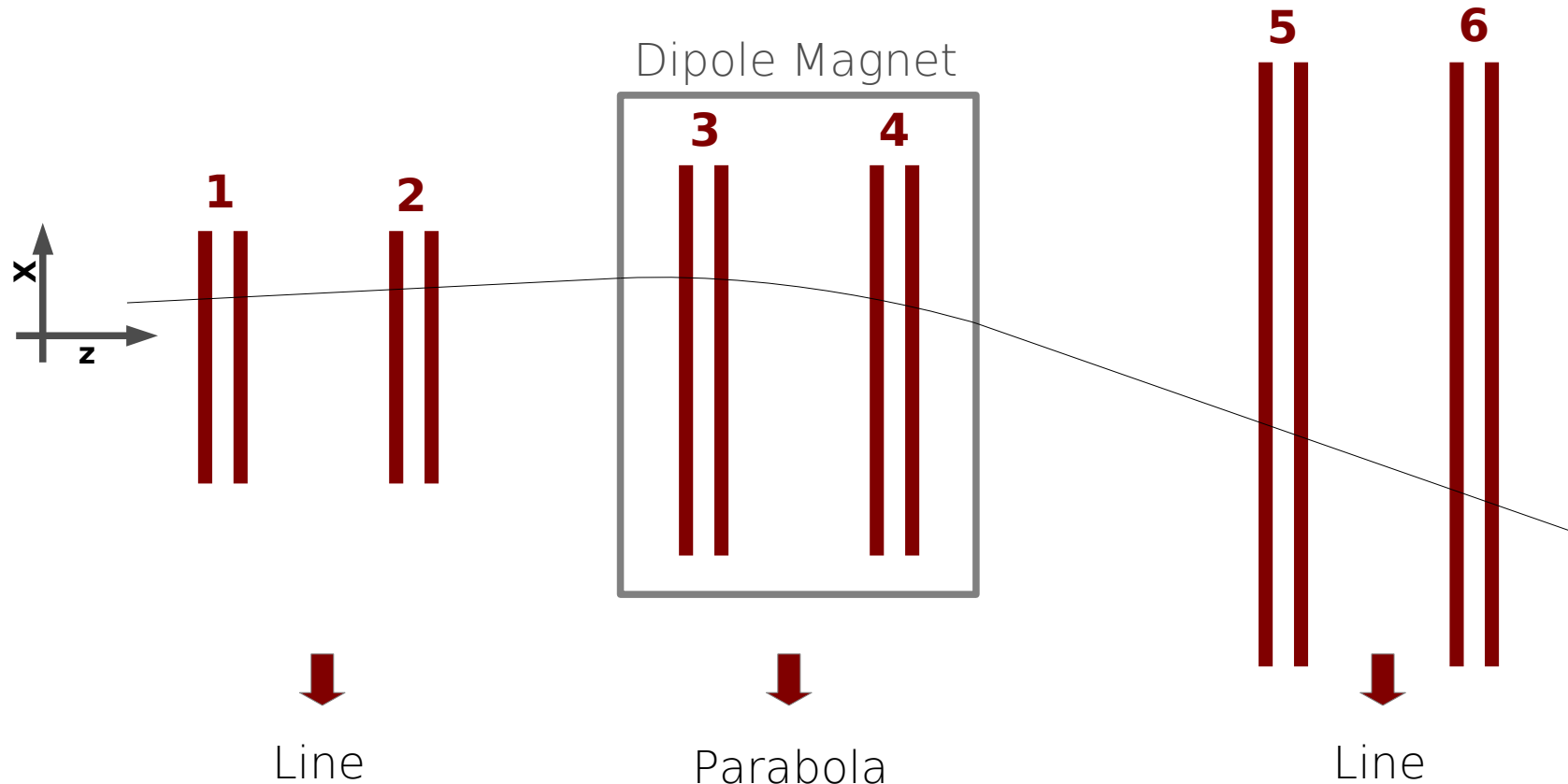 panda-wiki.gsi.de/foswiki/bin/view/Computing/PandaRoot

- Short-notice **Communication** on the Panda software forums is encouraged. https://forum.gsi.de/index.php?t=index&cat=26&

- **Reports** to the computing community via regular SeeVogh sessions.
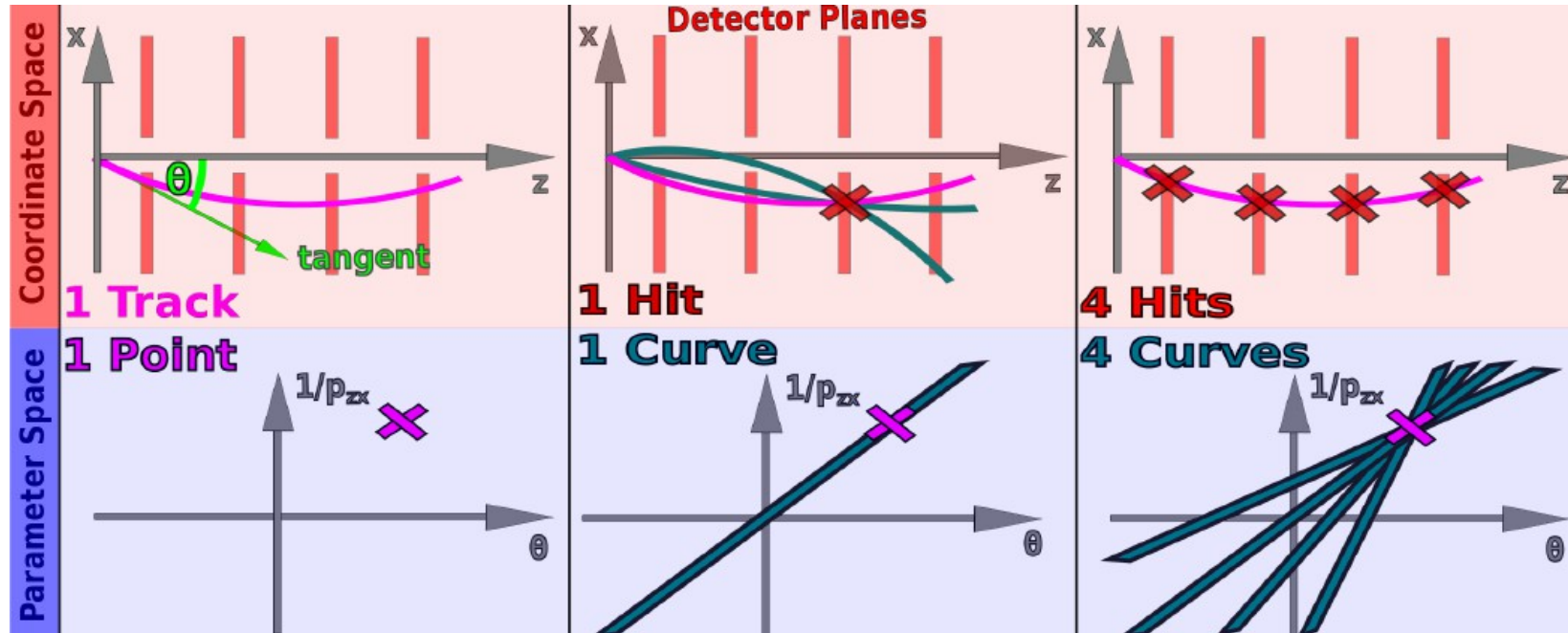
General Approach

Separation of X-Z and Y-Z component
X-Z: Connect perpendicular straws
Y-Z: Add skewed straws

PndFts**Hough**Tracker

- Combination of segments via Hough Transform (Martin Galuska 2014/2015)

- Well prepared in the framework
  https://subversion.gsi.de/trac/fairroot/browser/pandaroot/trunk/fts/FtsTracking
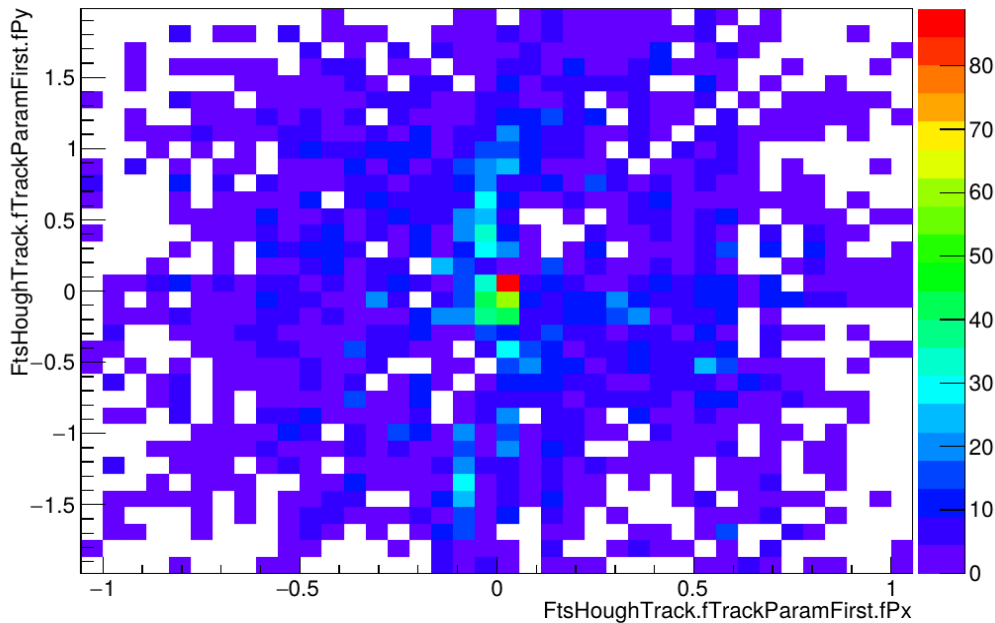
PndFts**Hough**Tracker

- Runs (still locally) with some modifications
- Moved hough space parameters to RTDB
- Using layer number instead of station z positions
- Fixed a unit conversion bug

PndFts**Hough**Tracker
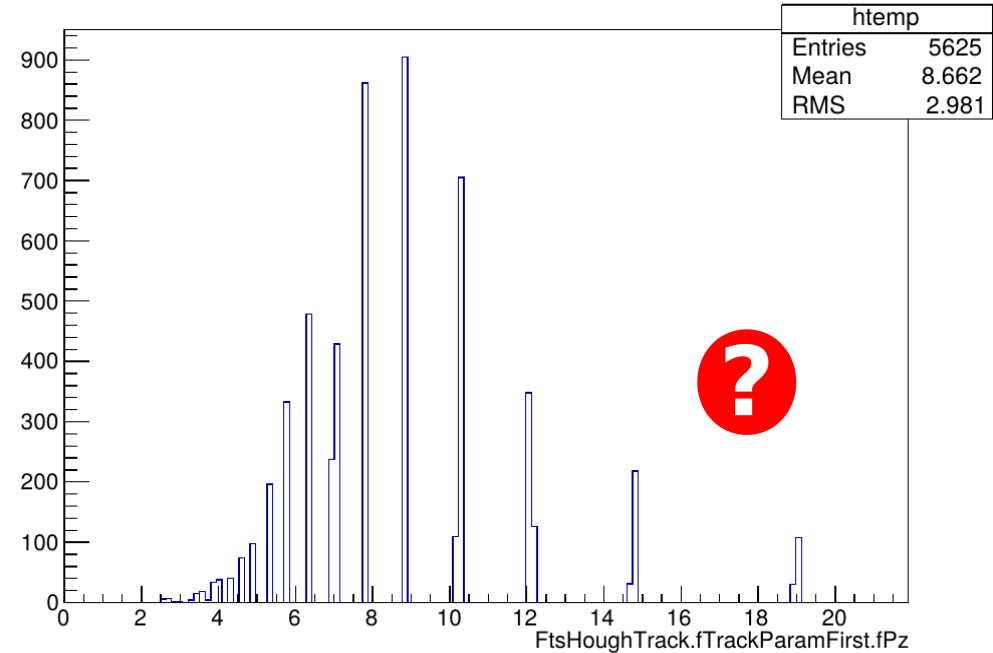
1000 single Muons with 2-3 GeV/c

p_x vs. p_y

FtsHoughTrack.fTrackParamFirst.fPy:FtsHoughTrack.fTrackParamFirst.fPx

p_z

FtsHoughTrack.fTrackParamFirst.fPz

htemp	
Entries	5625
Mean	8.662
RMS	2.981

PndFts**Hough**Tracker

- Still off in p_z, no idea why

- Isochrones not taken into account (!)

- Many hough space parameters to be studied for performance

  $\rightarrow$ Hough transform could be used for Parabola finding together with line finder from Feix/Jülich

- Classes are prepared in a general way

  (so, it could be easy)

Thank you.