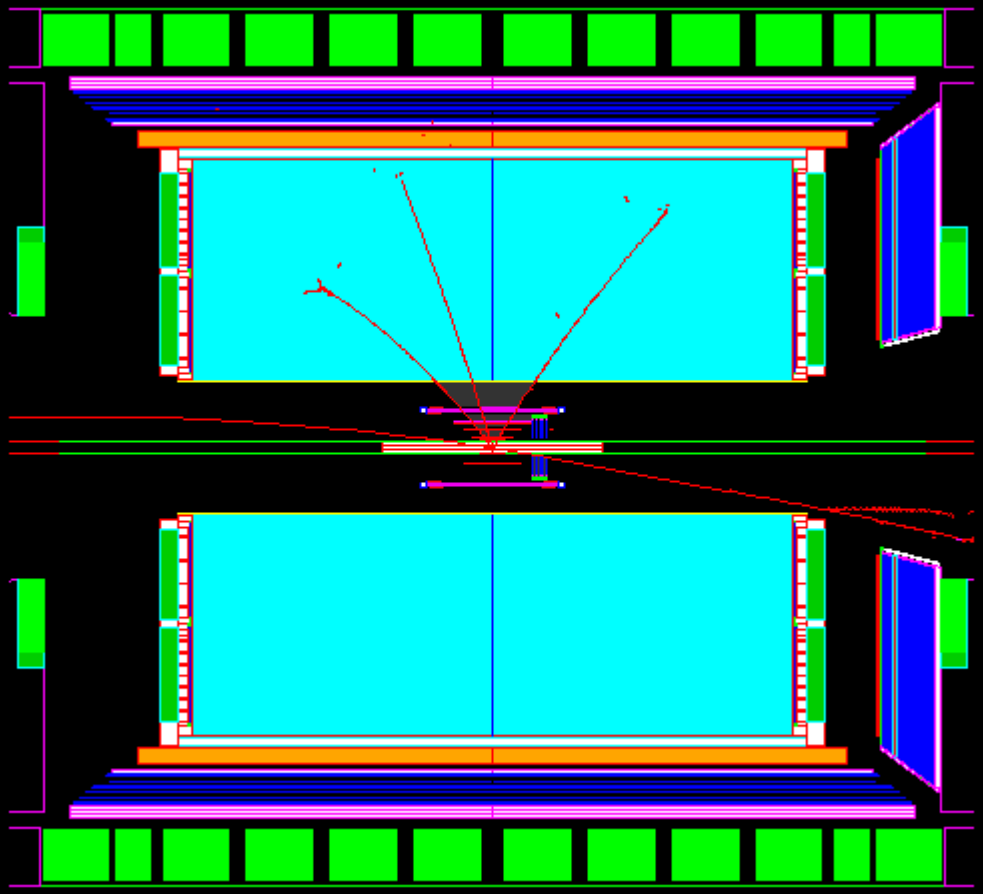
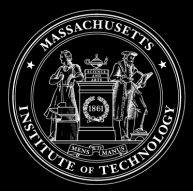
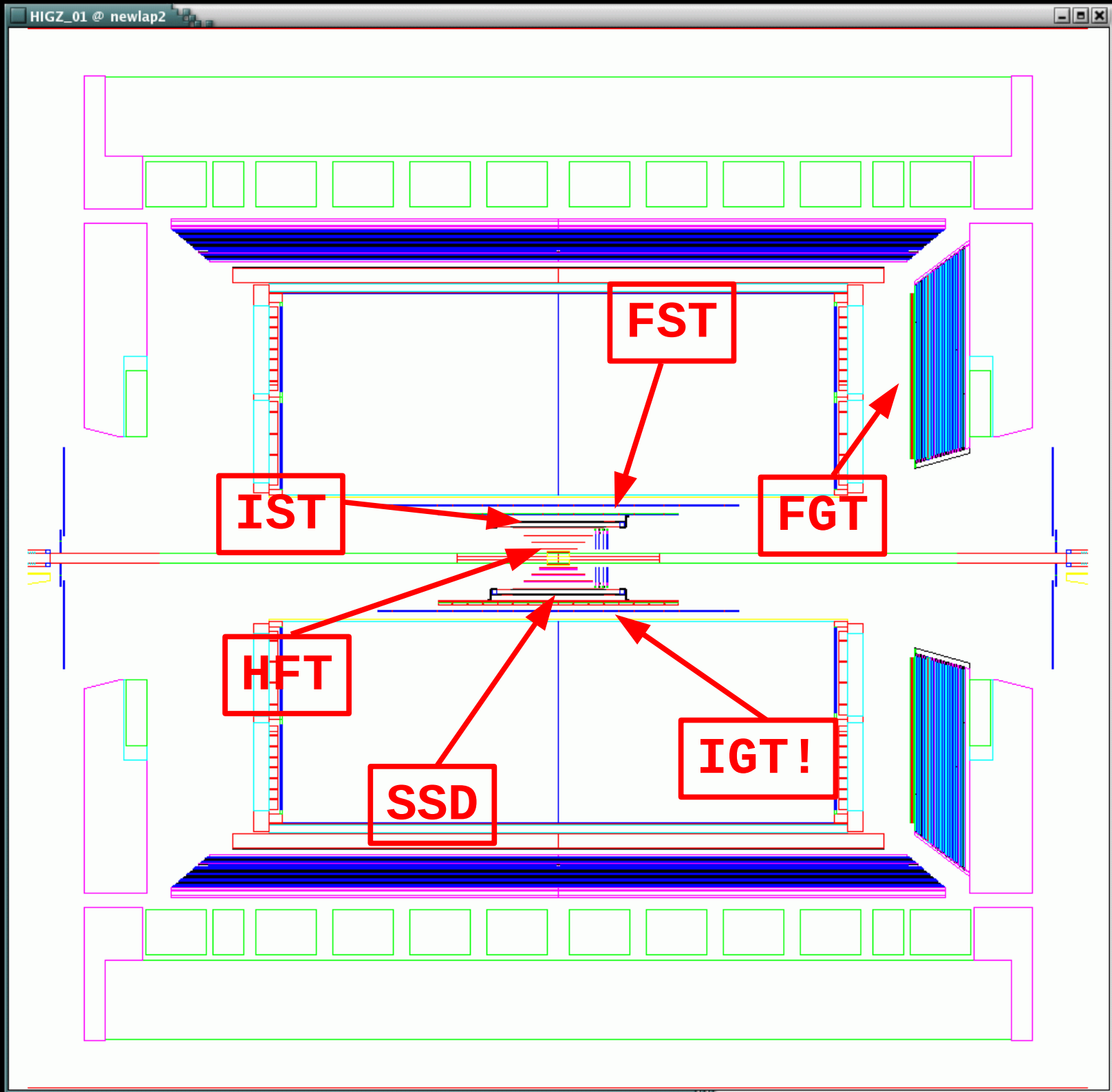
Simulation Status

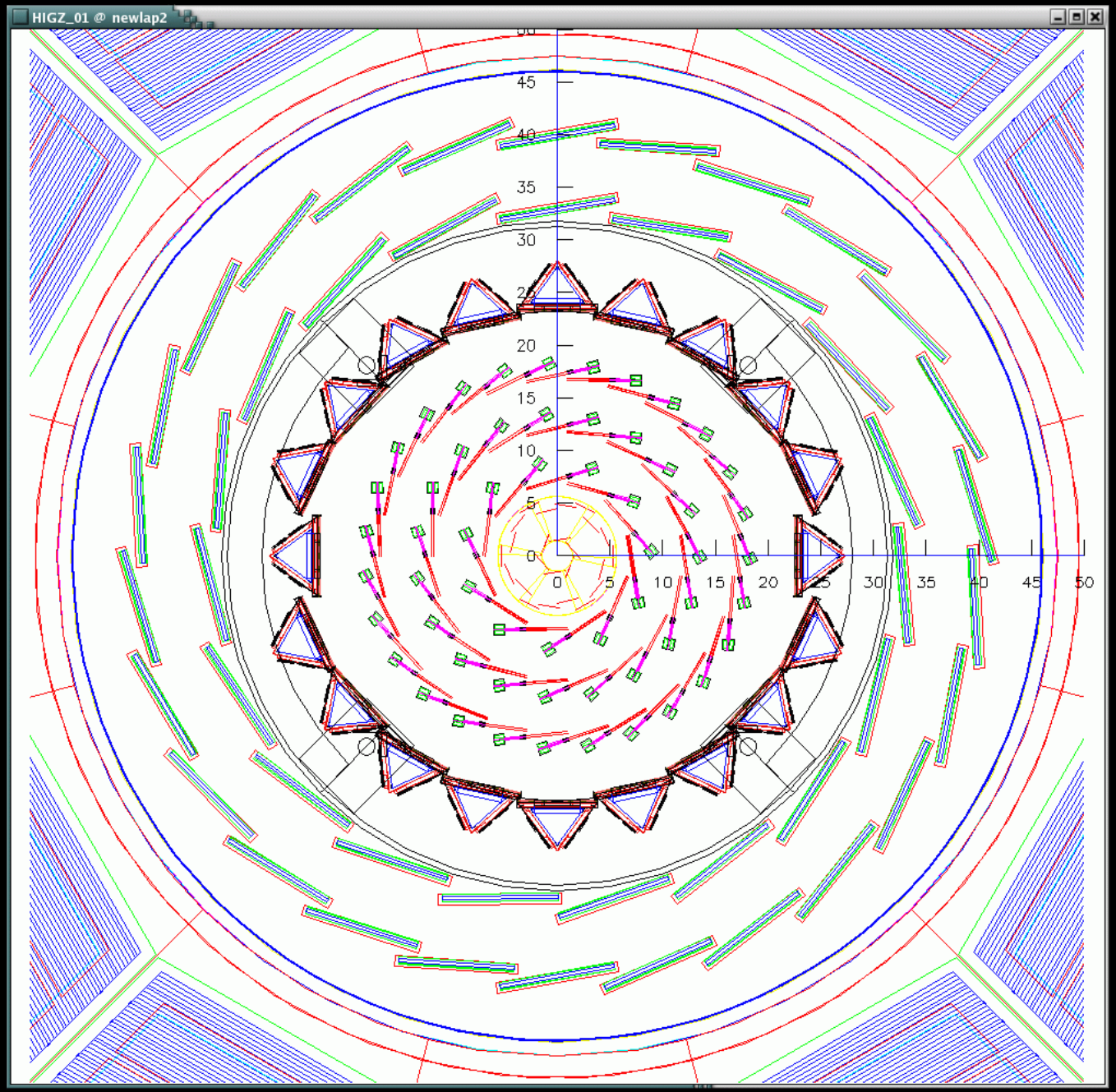




Gerrit van Nieuwenhuizen
Bates R&E Meeting
July 13, 2005

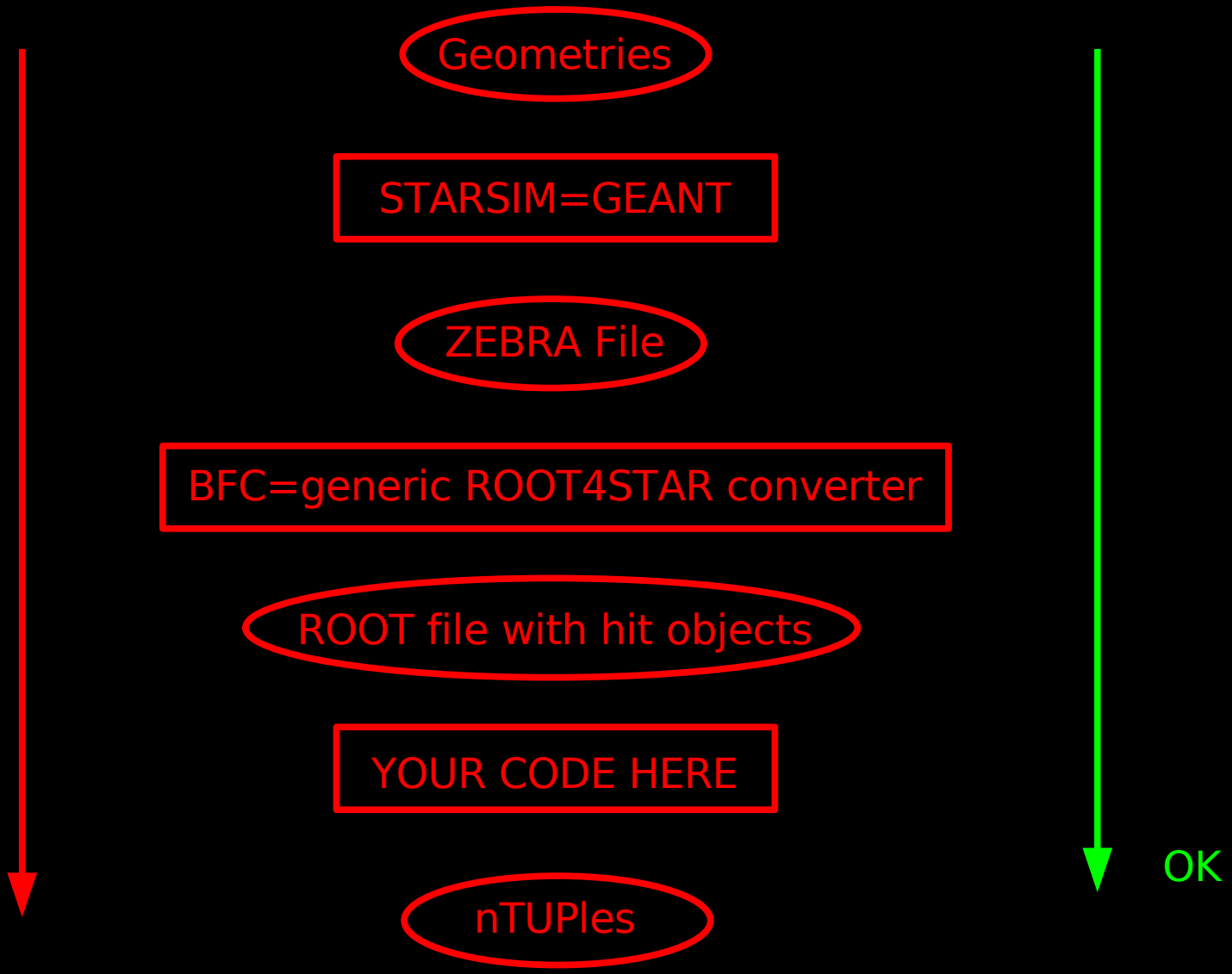

HIGZ_01 @ newlap2
FST
IST
FGT
HFT
SSD
IGT!

'Final' Inner GEM Tracker design



- Full geometry committed to STAR CVS and has propagated to STAR MC package
- All analysis code written and committed to STAR CVS and has propagated to STAR analysis package
- Code available through AFS for different Linux flavors, including those on MIT1 & MIT2
- MC generation started on MIT1 & MIT2

Fully functional MC system



MC wish list

Starting point for single particle and W simulations
==========

1. Single particle:

a. electrons: 10k samples with

- -1 < eta < 2
- pT: 1, 2, 5, 10, 15, 20, 25, 30, 35, 40 GeV/c
- delta eta: 0.2 (15 eta ranges)

Total: 10 X 15 X 10k samples

b. pions: 10k samples with

- -1 < eta < 2
- pT: 1, 2, 5, 10, 15, 20 GeV/c
- delta eta: 0.2 (15 eta ranges)

Total: 6 X 15 X 10k

2. W simulations:

Total cross-section X BR(W+/--->e+/e- final state):

W+: 135pb^-1
W-: 42pb^-1

For 1 < eta < 2:

W+: 14pb^-1
W-: 8pb^-1

Simulation request: 100K samples (e+/e- in final state!)

a. 1 < eta < 2

b. -1 < eta < 1

Electrons 1/2/5/10/15/20 about 70% done, getting slower for higher momentum! (only GEANT generation, needs BFC)

Pions 1/2/5/10/15/20 done (still needs BFC)

Pythia? Not done yet.

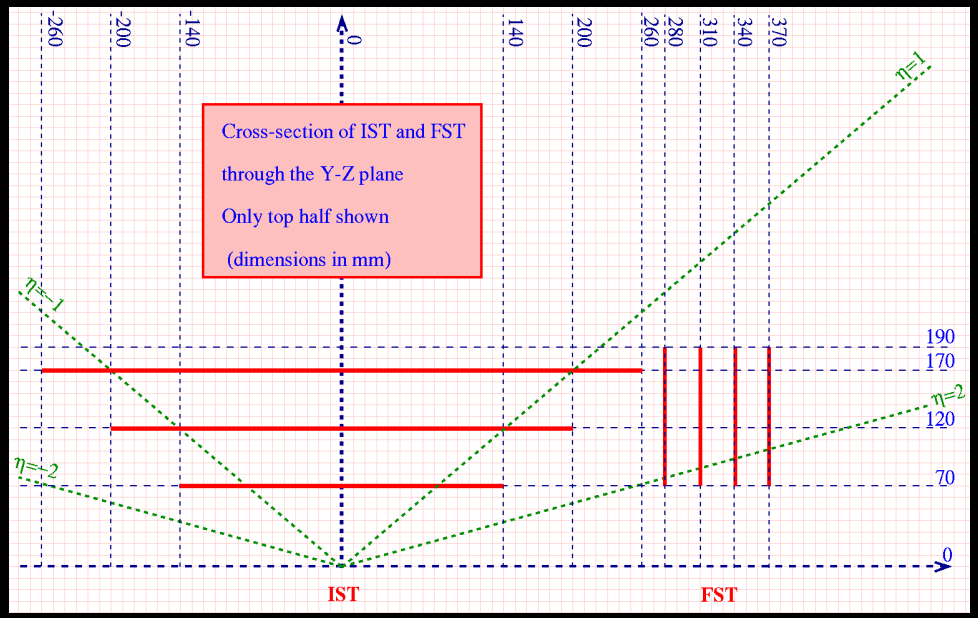
Hijing?

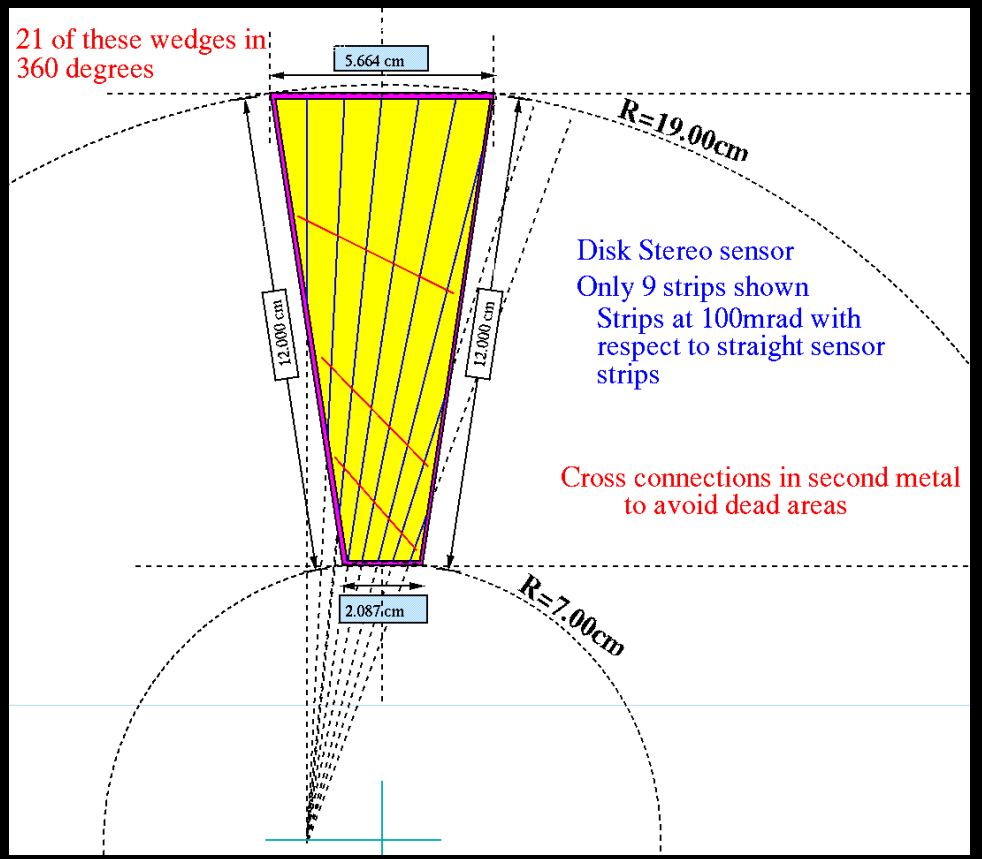
Input for strip simulator(s)

2 documents available describing detector and strip geometry

http://www4.rcf.bnl.gov/~nieuwhzn/STAR_TRACKER/SIMULATIONS/

http://www4.rcf.bnl.gov/~nieuwhzn/STAR_TRACKER/STRIP_GEOMETRY/





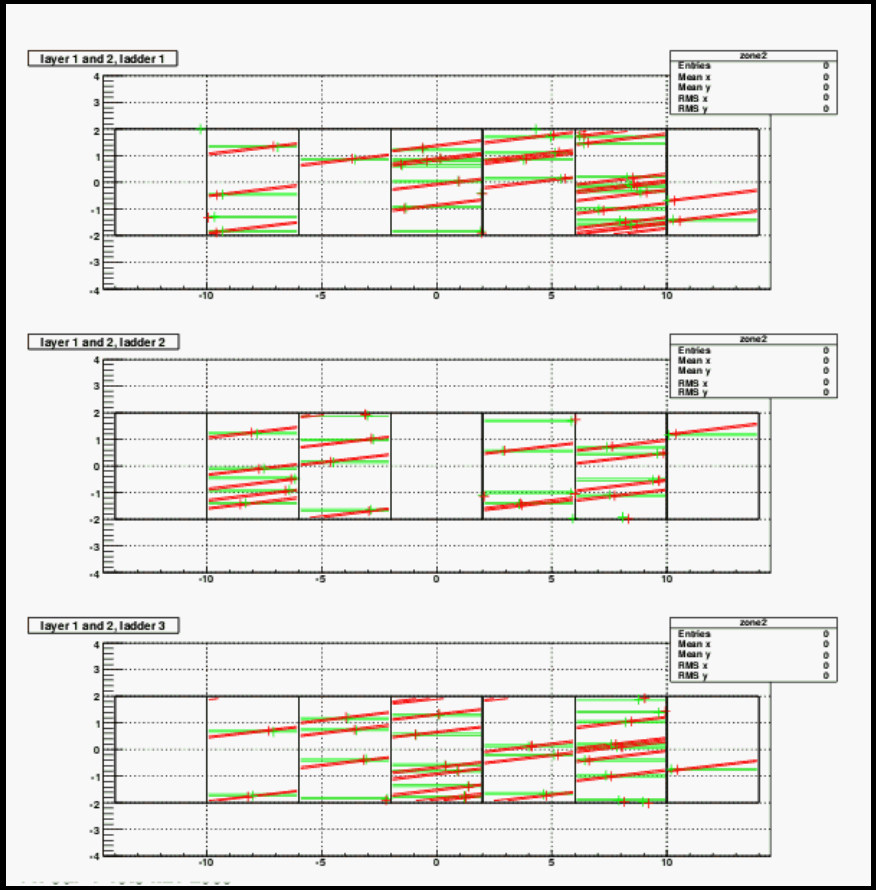
Central strip simulator & tracking

Willie Leight, Mike Miller

Deals with hits in the IST, connects hits to strips and 'smears' the hits

A document is available that describes the process

http://www.star.bnl.gov/protected/spin/wleight/StripSimUpdate/



The ITTF tracking code still has some issues.

The HFT code being used at LBNL is ancient and doesn't work anymore.

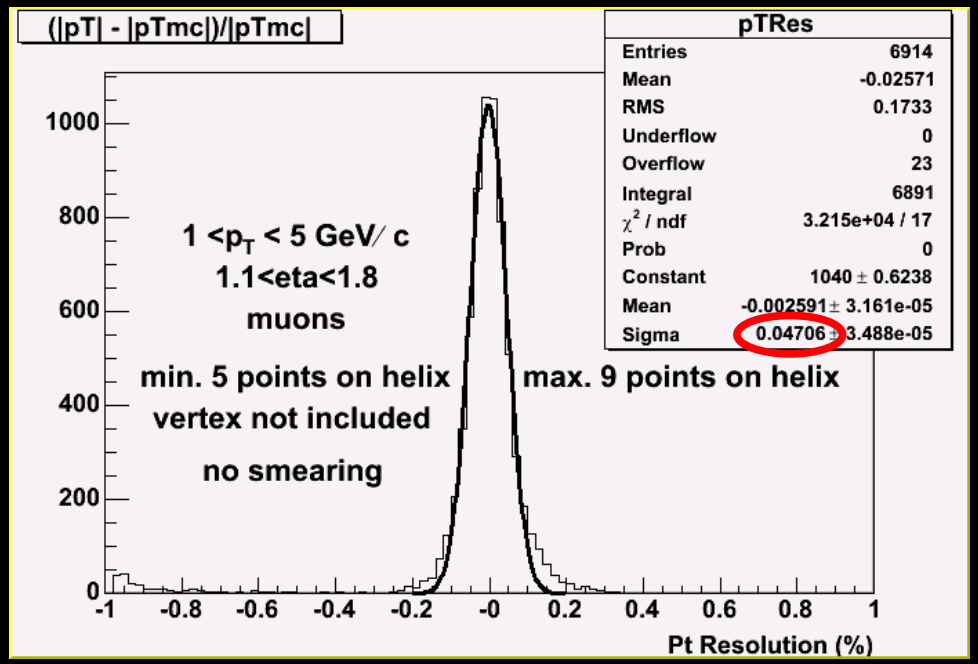
The official STAR ITTF needs to be geared towards what we need, but the person responsible is doing other, important, things.

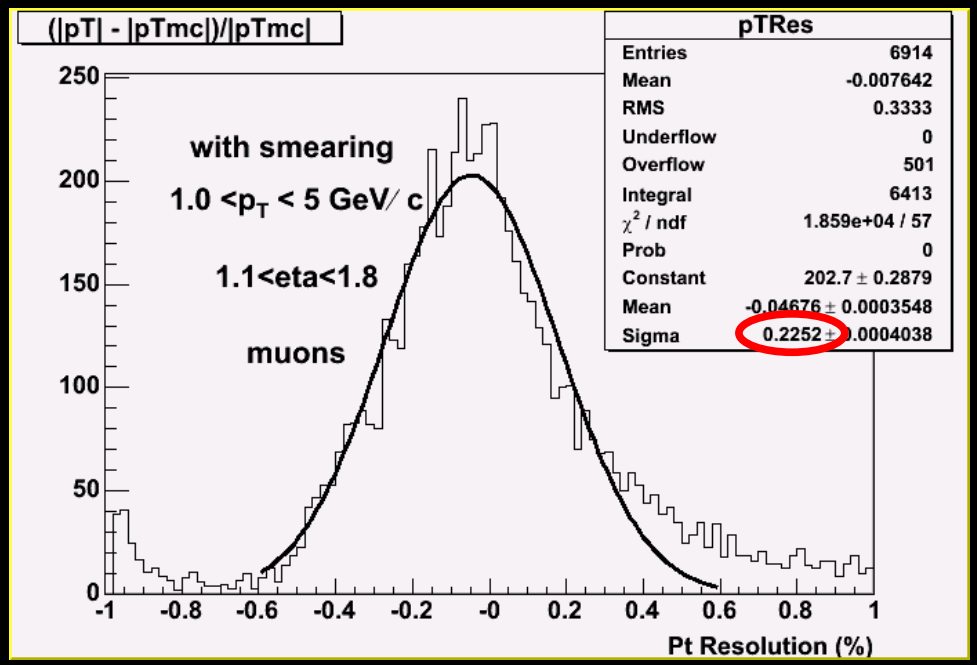
So, haven't seen any real tracking yet!

'Old' Helix fit for forward tracks

Mirko Planinic

Issues with momentum fit have been resolved





But the hit smearing needs a 'reality' check, i.e. resolution is assumed to be much worse than what we expect.
The current strip geometry needs to be taken into account!

Summary

- Full development geometry available
- Full development analysis code available
- Central strip simulator almost ready
- Central 'ITTF' tracking doesn't work yet
- Forward strip simulator needs to be improved
- Forward 'Helix' tracking operational
- MC generation has started on MIT1 and MIT2
- MC pions OK, Electrons slow, W+/W- -> e+/e-
  - needs some setup time still
- What do we need to show at the STAR collaboration meeting?