Software Update

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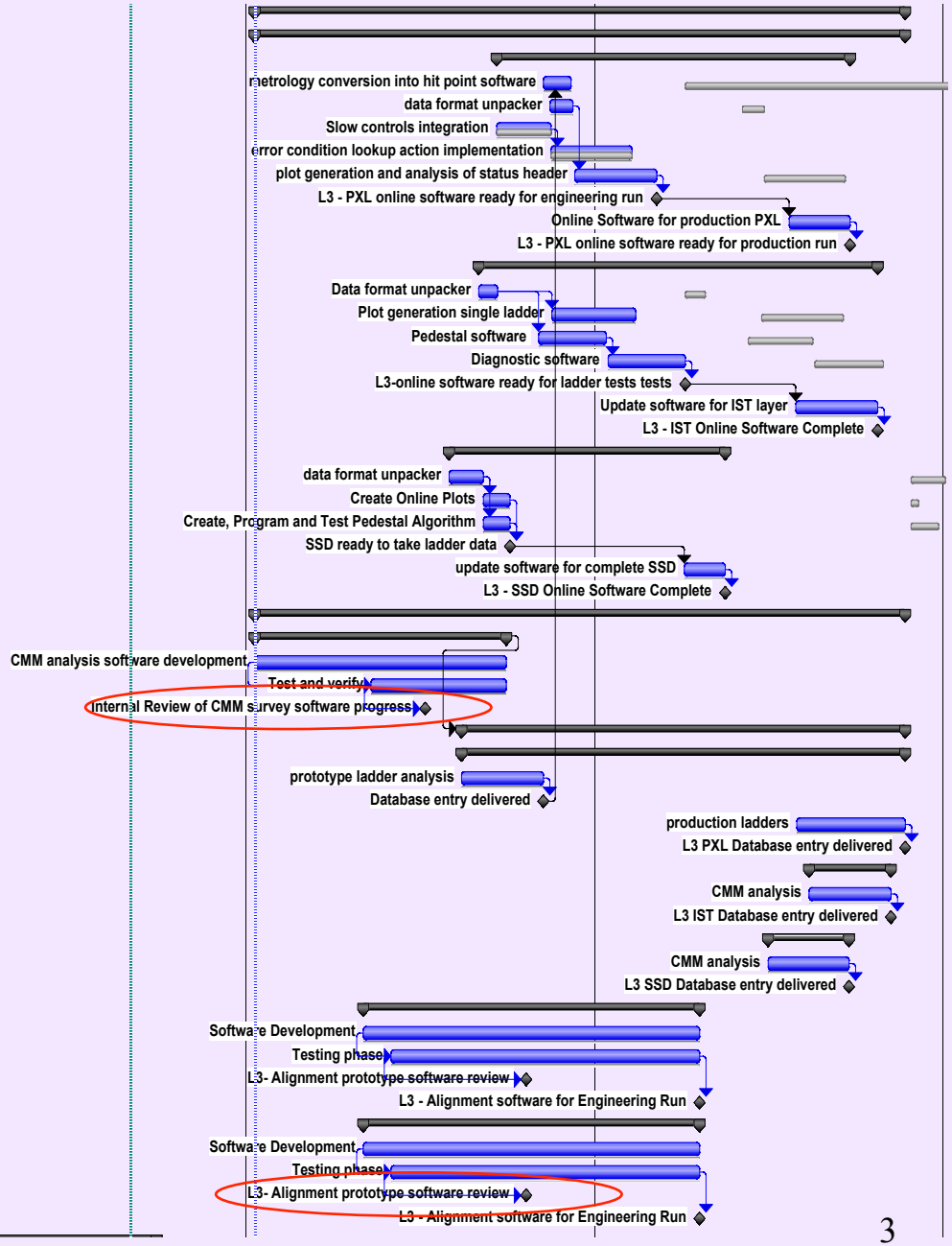
Outline (same as in Sept BNL meeting)

- Technical Progress and issues
- Expected progress for next ½ year
- Resource overview and needs
- Slow control considerations, interlocks.
- Lab space needs at BNL.

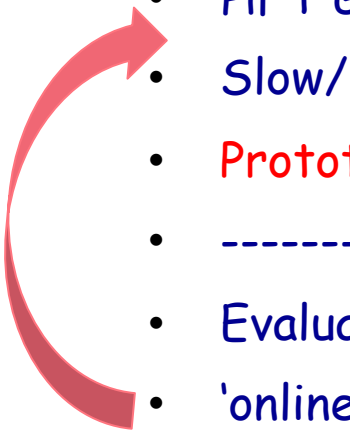
Schedule/Milestones (Flemming)

NOW

1.6	**Software**	**0%**	**464 days**
1.6.1	**Online**	**0%**	**464 days**
1.6.1.1	**PXL**	**0%**	**251 days**
1.6.1.1.1	metrology conversion into hit point software	0%	20 days
1.6.1.1.2	data format unpacker	0%	17 days
1.6.1.1.3	Slow controls integration	0%	40 days
1.6.1.1.4	error condition lookup action implementation	0%	60 days
1.6.1.1.5	plot generation and analysis of status header	0%	60 days
1.6.1.1.6	L3 - PXL online software ready for engineering run	0%	0 days
1.6.1.1.7	Online Software for production PXL	0%	45 days
1.6.1.1.8	L3 - PXL online software ready for production run	0%	0 days
1.6.1.2	**IST**	**0%**	**284 days**
1.6.1.2.1	Data format unpacker	0%	14 days
1.6.1.2.2	Plot generation single ladder	0%	61 days
1.6.1.2.3	Pedestal software	0%	50 days
1.6.1.2.4	Diagnostic software	0%	50 days
1.6.1.2.5	L3-online software ready for ladder tests tests	0%	0 days
1.6.1.2.6	Update software for IST layer	0%	60 days
1.6.1.2.7	L3 - IST Online Software Complete	0%	0 days
1.6.1.3	**SSD**	**0%**	**195 days**
1.6.1.3.1	data format unpacker	0%	25 days
1.6.1.3.2	Create Online Plots	0%	1 mon
1.6.1.3.4	Create, Program and Test Pedestal Algorithm	0%	20 days
1.6.1.3.5	SSD ready to take ladder data	0%	0 days
1.6.1.3.7	update software for complete SSD	0%	30 days
1.6.1.3.8	L3 - SSD Online Software Complete	0%	0 days
1.6.1.4	**Calibration and alignment**	**0%**	**464 days**
1.6.1.4.1	**Survey Software**	**0%**	**180 days**
1.6.1.4.1.2	CMM analysis software development	0%	9 mons
1.6.1.4.1.1	Test and verify	0%	5 mons
1.6.1.4.1.9	Internal Review of CMM survey software progress	0%	0 days
1.6.1.4.5	**CMM analysis**	**0%**	**318 days**
1.6.1.4.5.1	**Analysis of PXL**	**0%**	**318 days**
1.6.1.4.5.1.10	prototype ladder analysis	0%	3 mons
1.6.1.4.5.1.11	Database entry delivered	0%	0 days
1.6.1.4.5.1.12	production ladders	0%	4 mons
1.6.1.4.5.1.13	L3 PXL Database entry delivered	0%	0 days
1.6.1.4.5.2	**Analysis of IST**	**0%**	**60 days**
1.6.1.4.5.2.5	CMM analysis	0%	3 mons
1.6.1.4.5.2.6	L3 IST Database entry delivered	0%	0 days
1.6.1.4.5.3	**Analysis of SSD**	**0%**	**60 days**
1.6.1.4.5.3.1	CMM analysis	0%	3 mons
1.6.1.4.5.3.2	L3 SSD Database entry delivered	0%	0 days
1.6.1.6	**Global Alignment**	**0%**	**240 days**
1.6.1.6.1	Software Development	0%	12 mons
1.6.1.6.2	Testing phase	0%	11 mons
1.6.1.6.3	L3- Alignment prototype software review	0%	0 days
1.6.1.6.4	L3 - Alignment software for Engineering Run	0%	0 days
1.6.1.8	**Self Alignment**	**0%**	**240 days**
1.6.1.8.9	Software Development	0%	12 mons
1.6.1.8.10	Testing phase	0%	11 mons
1.6.1.8.11	L3- Alignment prototype software review	0%	0 days
1.6.1.8.12	L3 - Alignment software for Engineering Run	0%	0 days



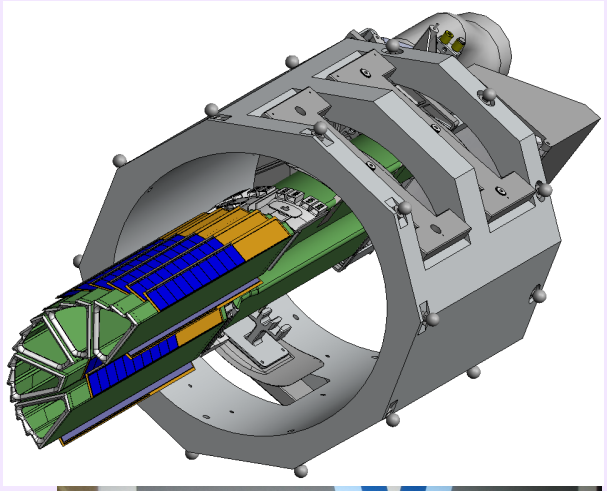
Prioritized list of activities for the next year

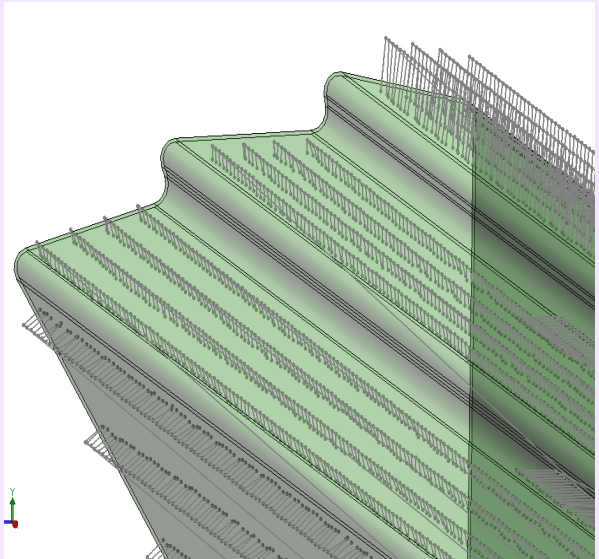


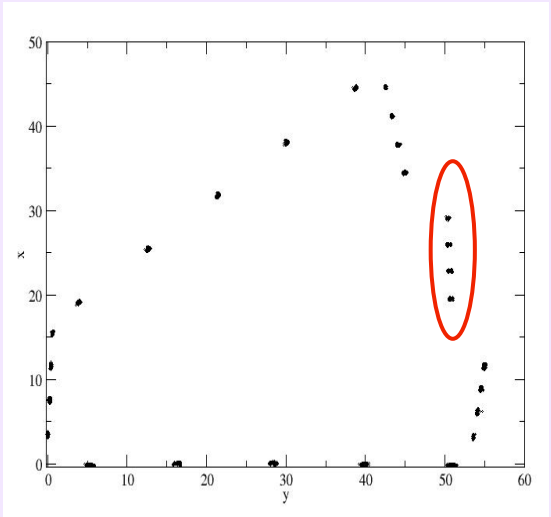
- CMM + related work (on-scope)
- HFT Geometry model update
- Slow/Fast PXL response simulation
- Prototype tracking
- ----------
- Evaluation/Analysis framework
- 'online' data format/slow controls/online QA/Db considerations
- ----------
- Kalman fitter for decays
- Tests of new STV tracker
- Hit reconstruction
- Event vertex finders

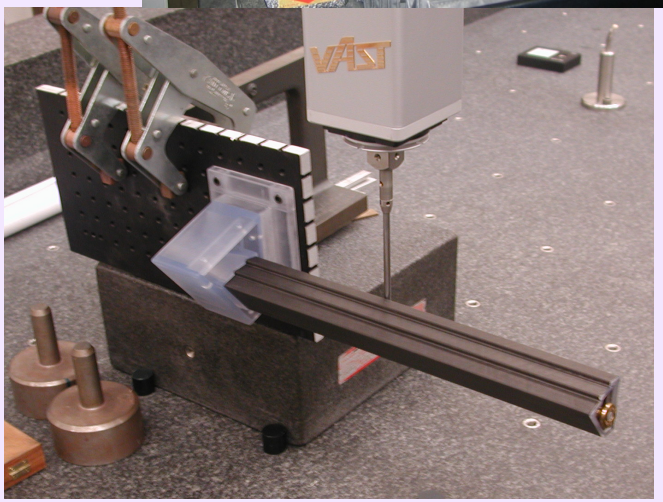
Prioritized list of Tasks for next year

- **CMM measurements + related work for PXL fixture and prototype sectors**
- Need measurements for several reasons
- Need simulations (that need geometry)
- It is getting tight
  - Review in April 2012
- **It is a "Focus Subject" now to be discussed separately.**



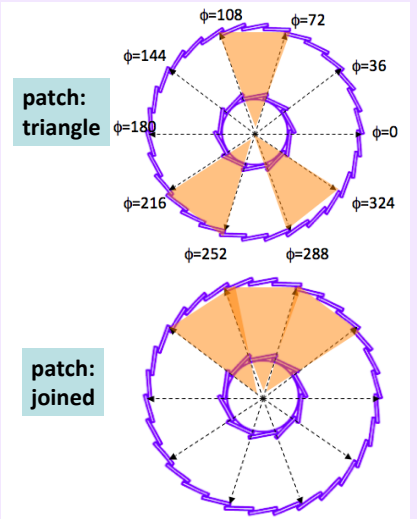


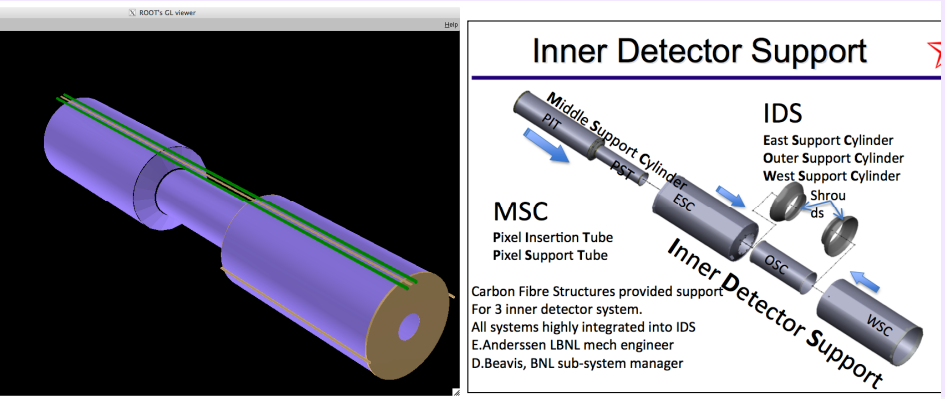


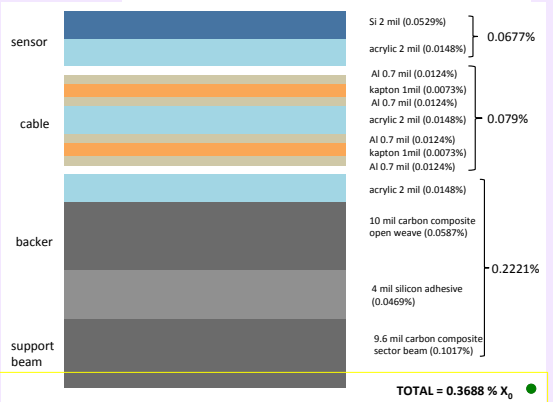


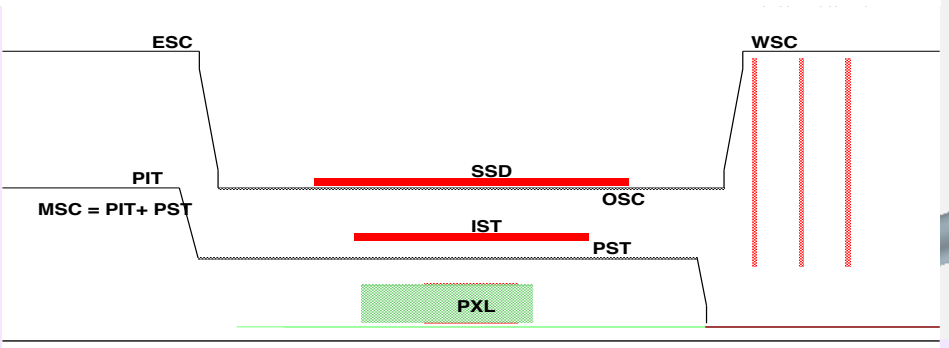
Prioritized list of Tasks for next year

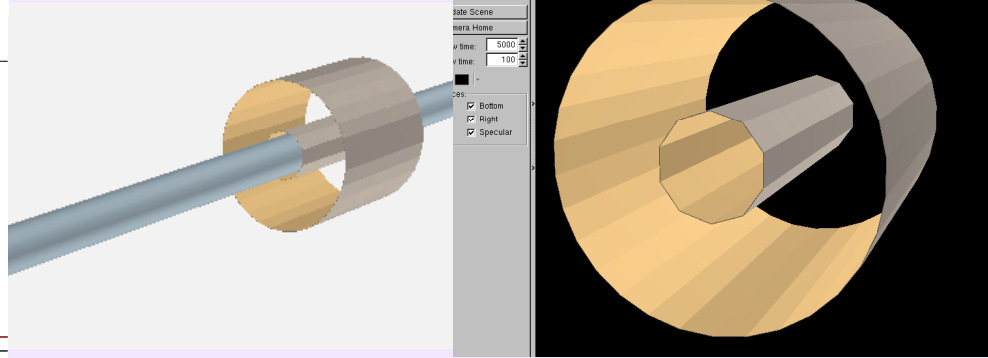
- **HFT Geometry model update**
  - **Create Y2013a/b geometries**
  - Jason created 'blank' based on Y2012
  - We are gathering info on material for Y2013
    - What, how much X0
  - Jim/Flemming/Leo of great help
  - **…but manpower an issue**









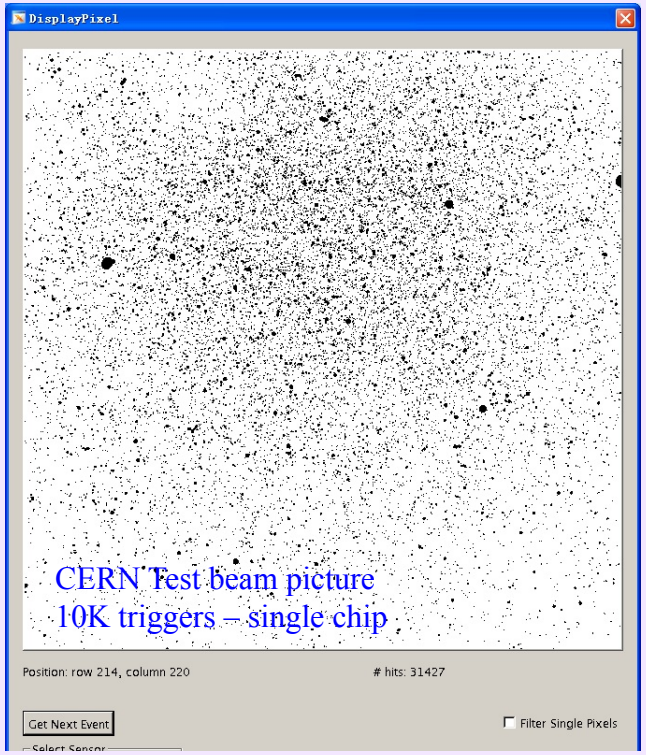


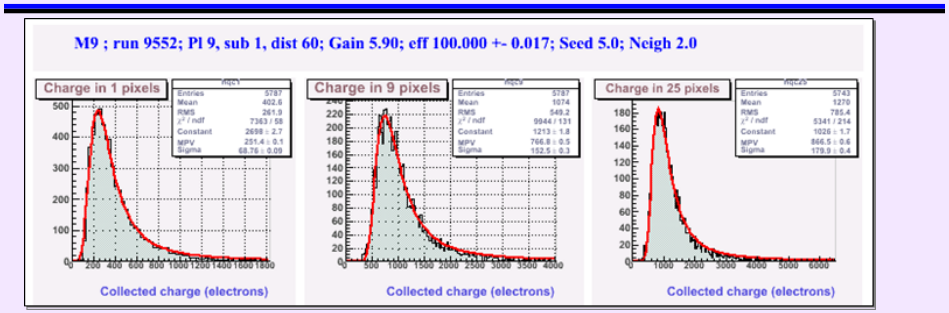
Prioritized list of Tasks for next year

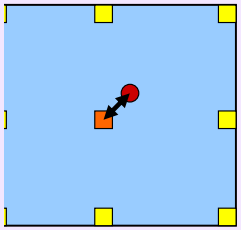
- **'Online' data format/slow controls/online QA/Db considerations**
  - Needs to be defined/clarified a.s.a.p.
  - It is a 'Focus Subject' now

Prioritized list of Tasks for next year

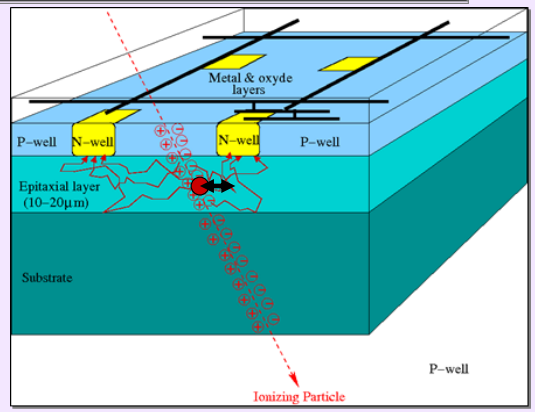
- Slow/Fast PXL response simulation
  - Initial work done earlier by Purdue
  - ***Got their DIGMAPS code***
  - CERN data (inclined incidence) can fix most parameters
  - **Will collaborate to make an acceptably fast 'slow' simulator for the chain**
  - …but manpower is thin





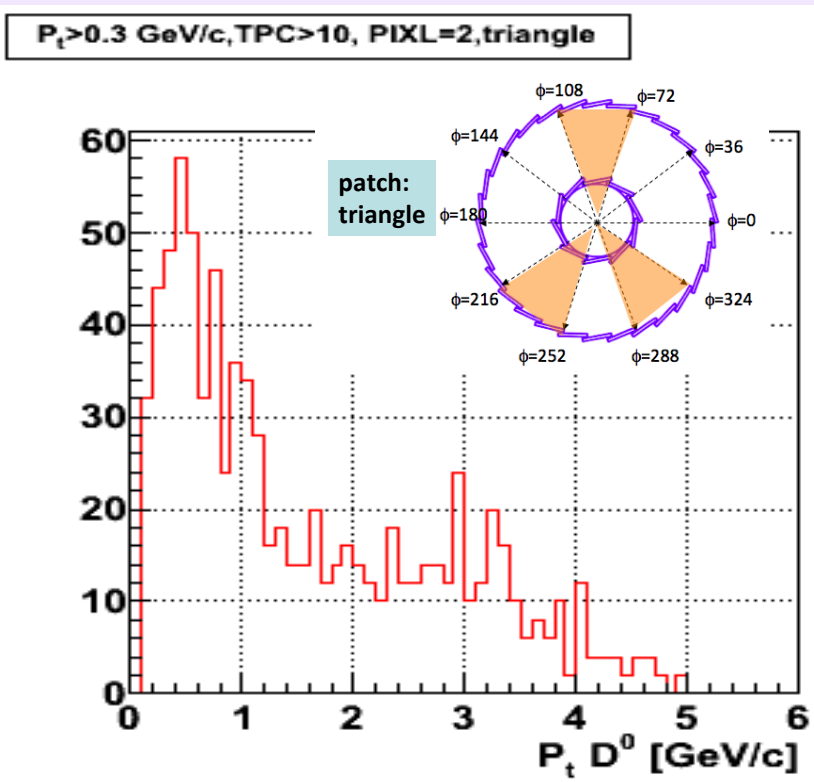


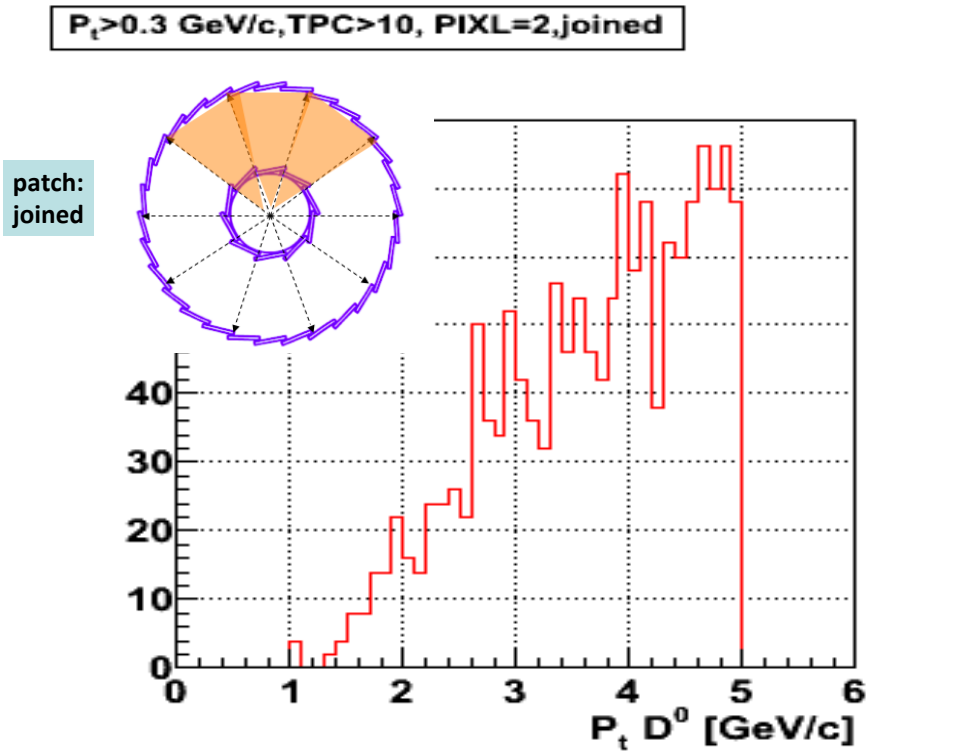
= Collecting diodes
= seed diode
= Impact position
= seed-impact distance



Prioritized list of Tasks for next year

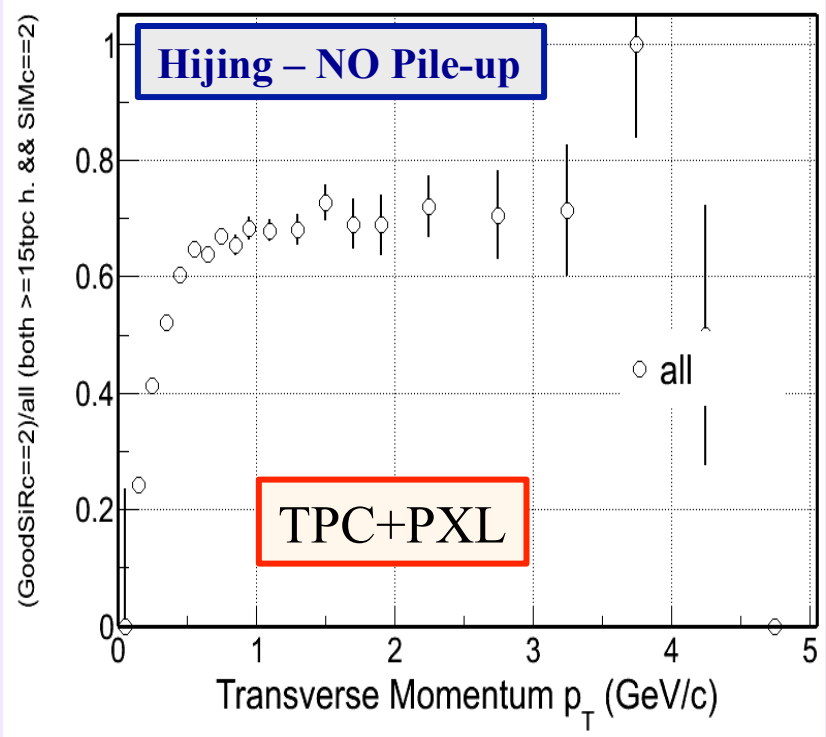
- **Tracking with TPC+PXL prototype?**
  - Can we do anything substantial here?
    - Any physics with the prototype?
  - Jonathan spends some time on this right now
    - Some initial results look not disappointing but…let's not celebrate yet.

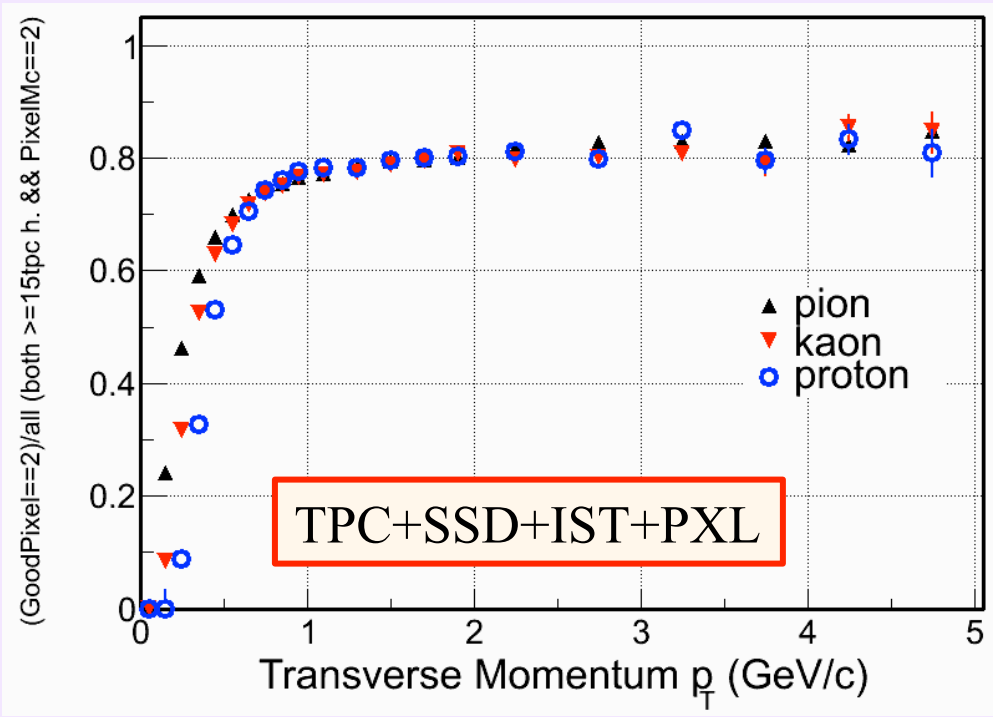




Prioritized list of Tasks for next year

- **Tracking with TPC+PXL prototype?**
  - Good tracking efficiency (but no pile-up yet)

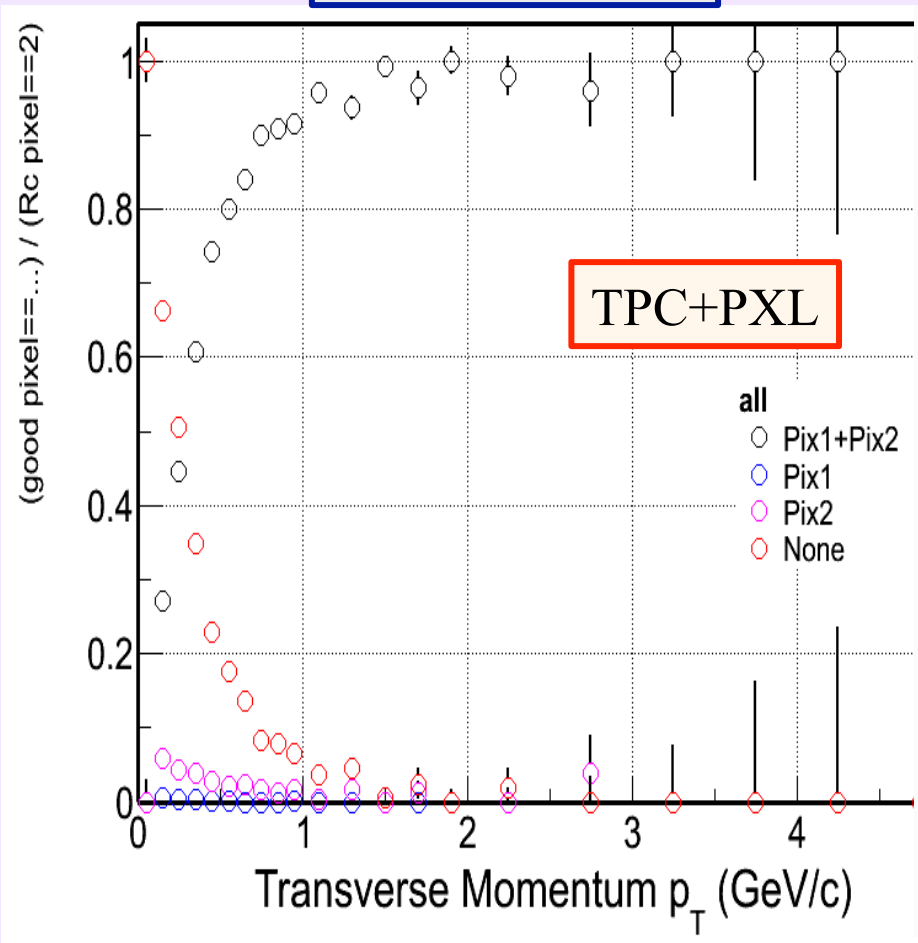


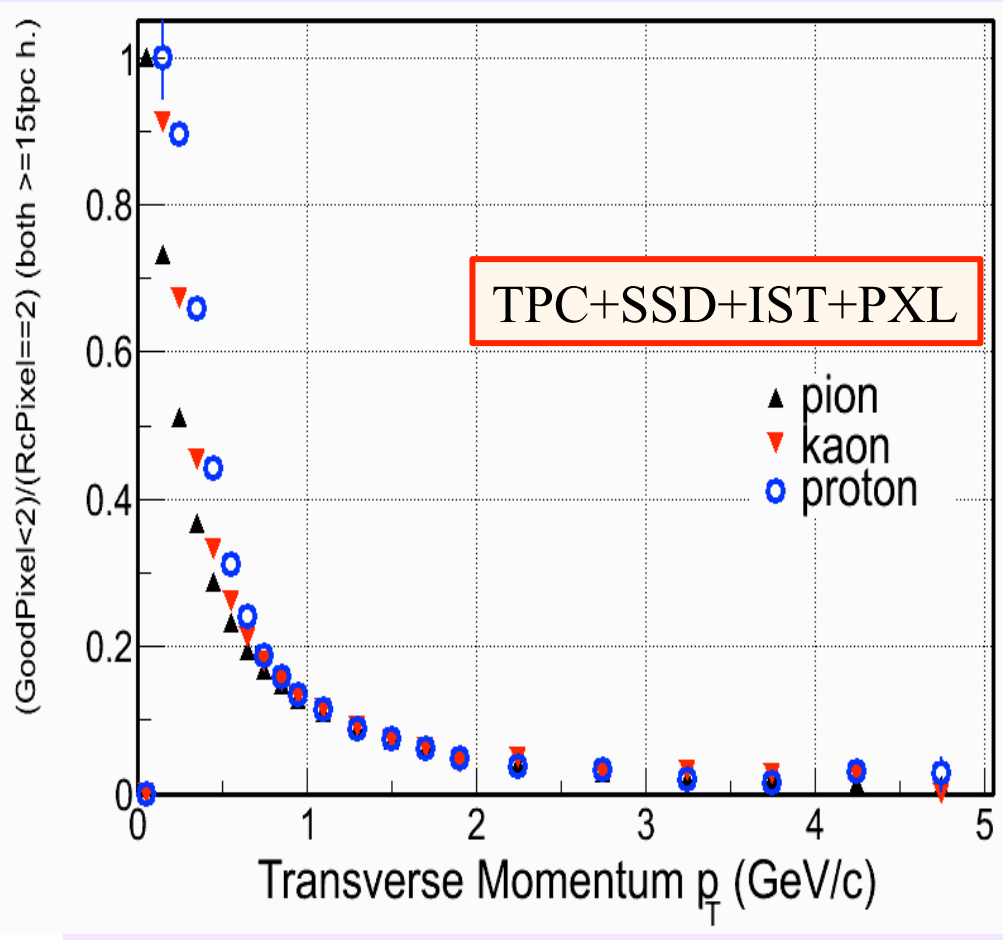


http://www.star.bnl.gov/protected/jetcorr/kapitan/HFT/upgr15_2010/productionQA/thin/CD1/single/

- **Tracking with TPC+PXL prototype?**
  - Low Ghosting

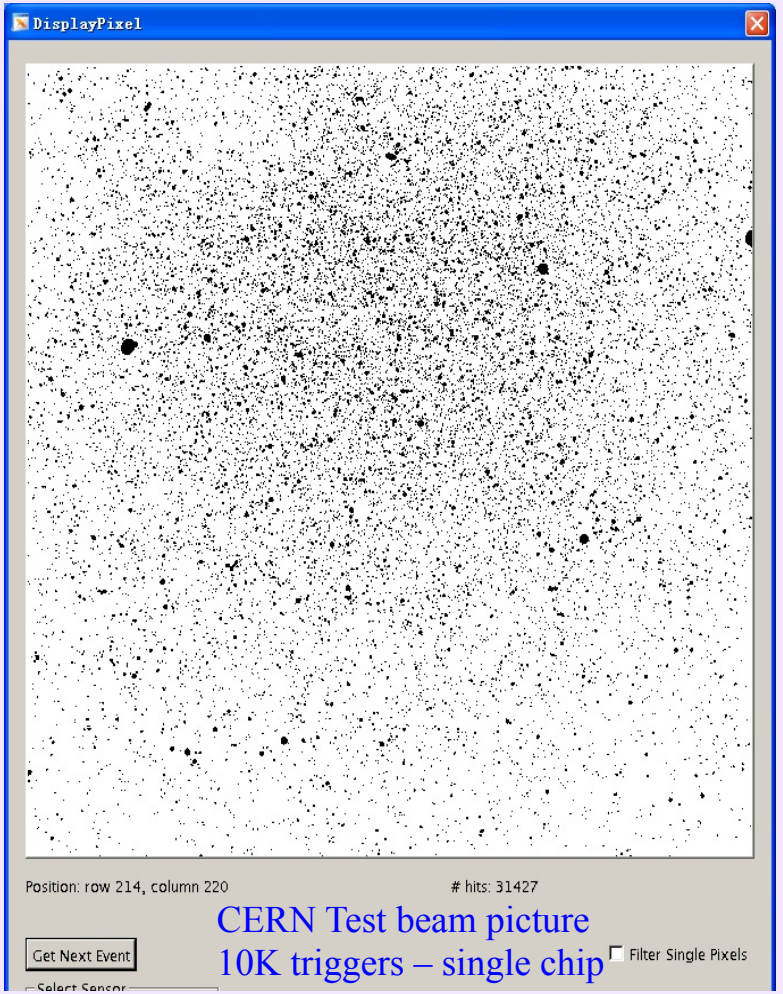
Hijing – NO Pile-up





Prioritized list of Tasks for next year

- **Analysis of CERN data**
  - What can we learn for this data set?
  - ???



CERN Test beam picture
10K triggers – single chip

Summary

- Things started moving but pace is not the desirable one mainly due to low number of people involved
  - We need to change this.
  - We need to make the Collaboration aware of the coming HFT
    - In the Council
    - Jonathan gives a talk tomorrow in HF group
    - I speak in computing plenary on Friday

- We started interacting with the S&C group and expect an increasing interaction with the BNL-core group
  - Started with Jason on geometry but will expand to all areas like Calibration, Tracking etc etc
    - We need our contacts to these groups