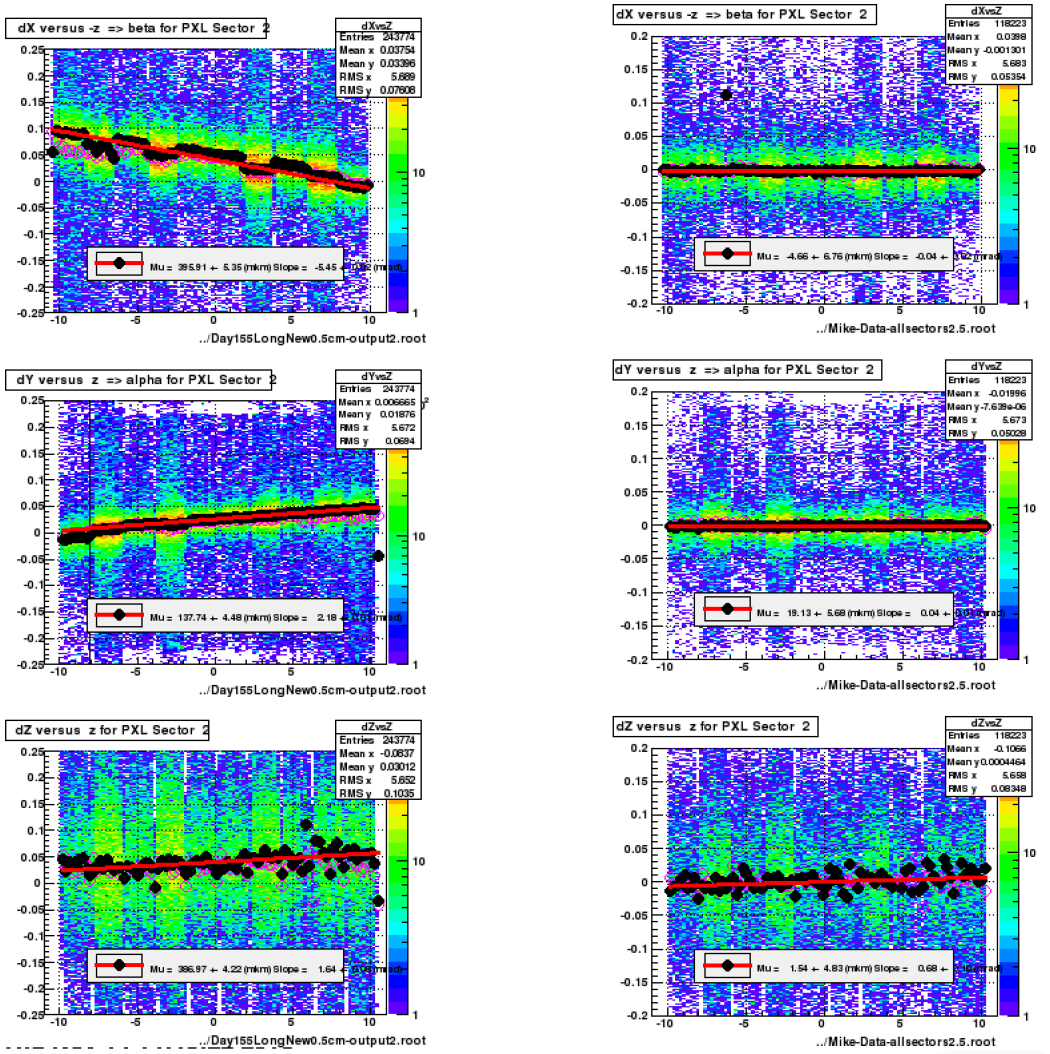
WBS 1.6 Software

1) **Full System Simulations:** Initial QA on a detailed full system simulation for KPP and physics performance was performed this month with.

2) **Alignment:**
   a) All three sectors used in Run13 (Pixel engineering run) are fully aligned, i.e. the results of further iterations do not give corrections larger that estimated errors of the method. The figure below shows the X,Y,Z residuals of primary tracks (actual minus predicted position) before (left row) and after (right row) the alignment was done of one of the three sectors used in Run13, sector-2.



b) Besides the "single-object", Sector-based alignment, the CMS method was extended to single ladder alignment.
c) Several "blind" simulation samples were used to further test the codes and help estimate the systematic errors of the methods.
d) Initial results from single-ladder alignment show that there is no difference, beyond estimated errors, in their in-situ position relative to the Surveyed ladder position. If this holds it will be a significant result since we can then fully rely on the Surveyed positions of sensors on ladders and ladders on sectors for the Pixel detector (the most demanding device of the system).
e) An independent inter-sector alignment method is in development using vertex-correlation and track DCA information of tracks in different sectors. We have encouraging initial results.
f) Work has begun on including the IST and SSD information in the alignment packages.

3) **Survey for Run14**: The Pixel-sector survey is ongoing for the new sectors built at LBL. At the same time the initial survey info for the SSD detector has been build and work for the IST is in progress. These are level-3 milestones for this calendar year.
4) **SSD/IST Offline codes:** This month there was a lot of progress on the SSD side (DAQ reader software) and on several IST items (including a draft of online monitoring plots).
5) **PXL and IST software review:** The PXL and IST software review is progressing. Implementing feedback is ongoing.

6) **AOB**
a) We will have a one-day face to face HFT software meeting on December 12, 2013 at BNL to review status and readiness for the upcoming Run14.