



Effect of DT Internal Alignment on Sawtooth

Jim Pivarski

Texas A&M University

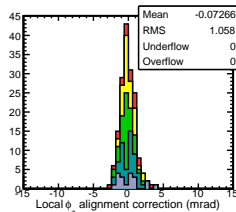
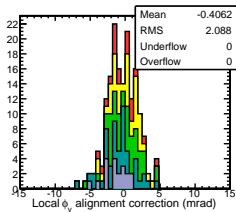
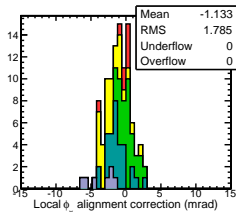
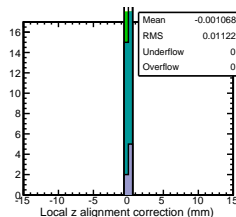
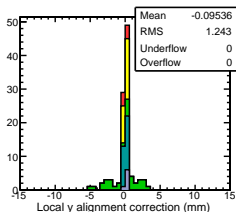
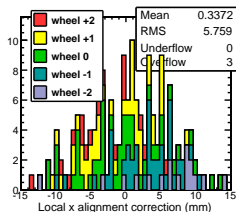
18 May, 2009



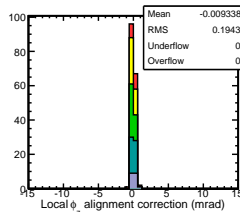
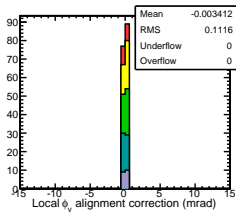
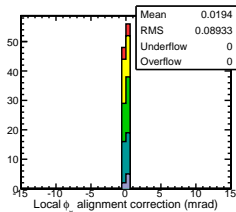
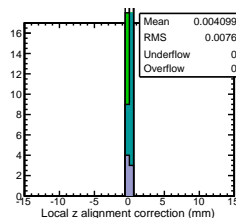
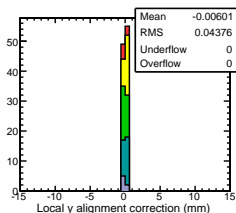
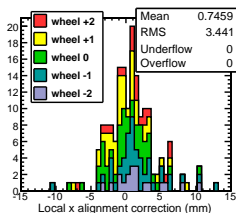
- ▶ Latest tracker alignment and APEs (alignment already exists, APEs will be ready in a few days) ([not included here](#))
- ▶ Latest magnetic field (no developments more recent than a few weeks ago)
- ▶ New internal DT alignment, if that is accepted
- ▶ High p_T (100–200 GeV, see last muon POG)
- ▶ CMSSW_2_2_11

This talk shows a HIP global alignment with the new internal DT alignment, with a focus on the sawtooth effect in residuals

- ▶ Aligning x , y , ϕ_x , ϕ_y , ϕ_z in stations 1–3, wheel 0
- ▶ Aligning x , ϕ_x , ϕ_y , ϕ_z in stations 1–3, other wheels
- ▶ Aligning x , ϕ_y , ϕ_z in station 4

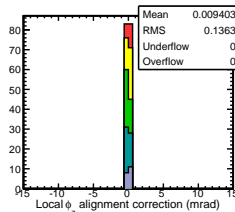
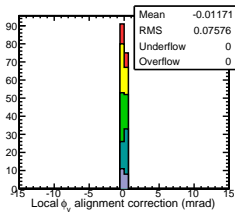
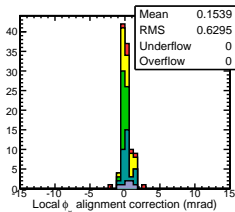
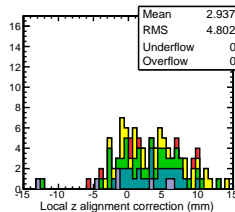
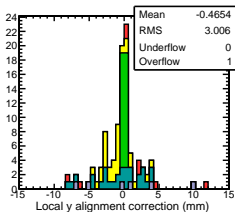
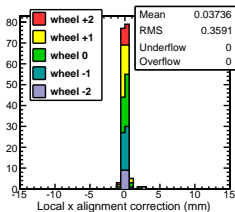


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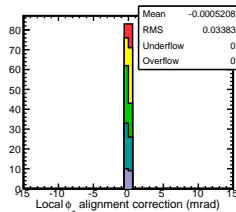
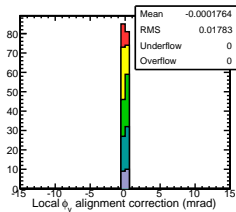
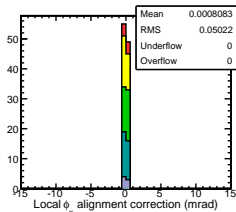
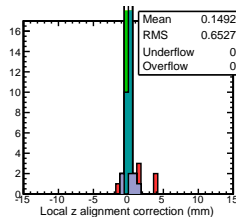
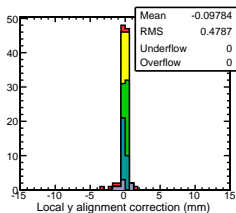
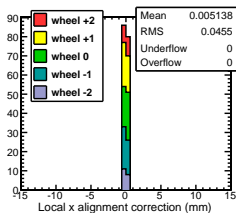




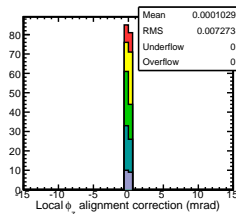
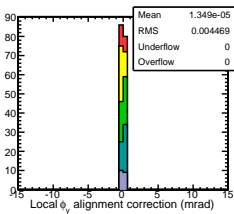
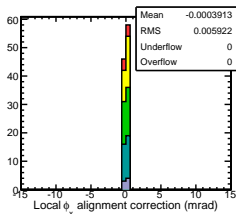
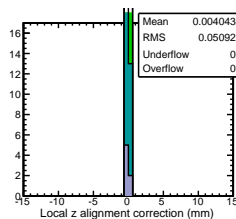
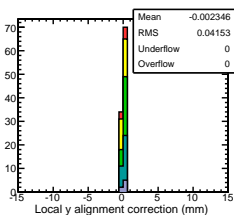
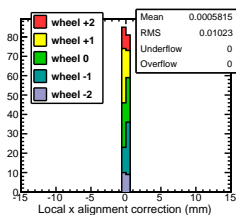
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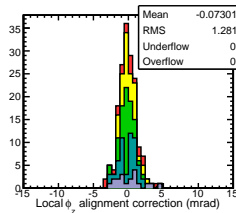
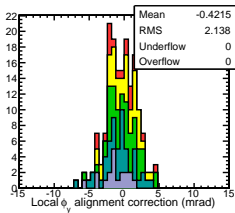
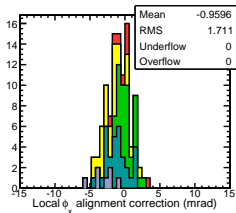
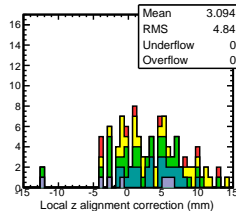
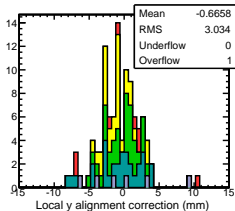
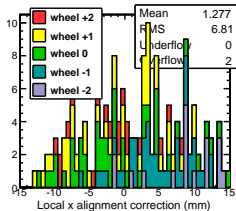


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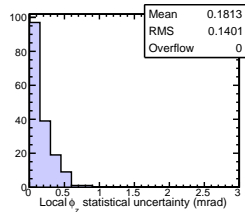
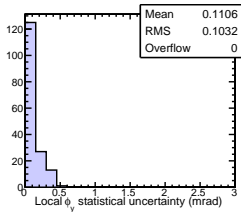
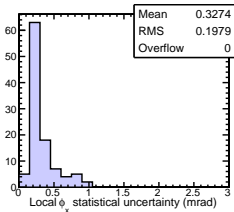
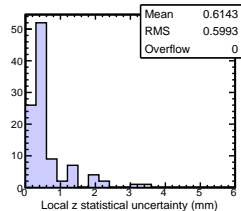
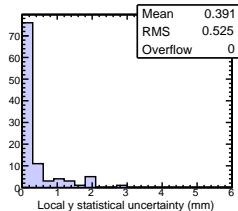
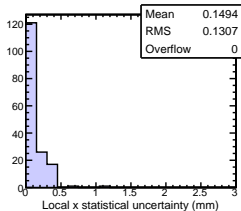
Beginning-to-end changes

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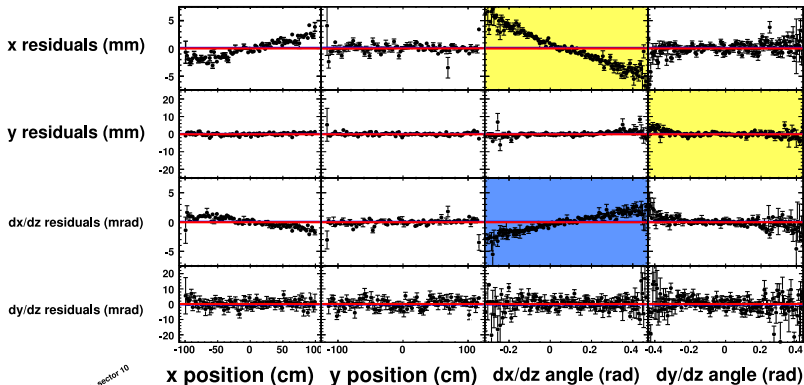
Statistical uncertainties

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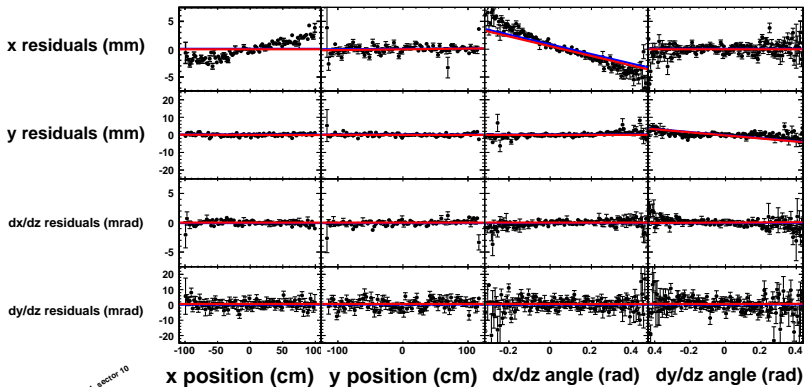
One chamber

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One chamber

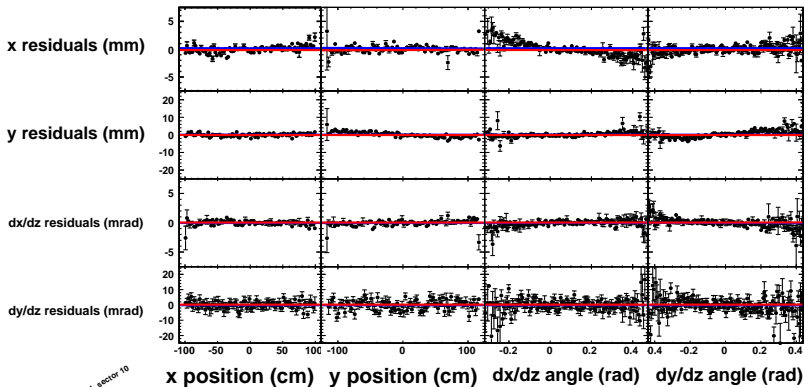
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DT wheel 0, station 1, sector 10

One chamber

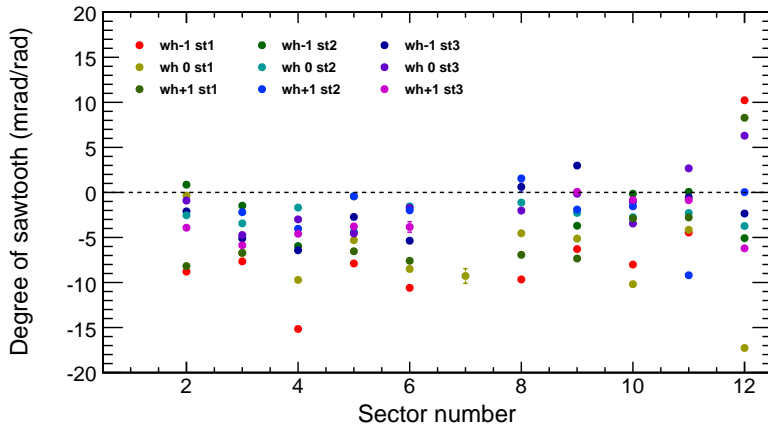
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DT wheel 0, station 1, sector 10

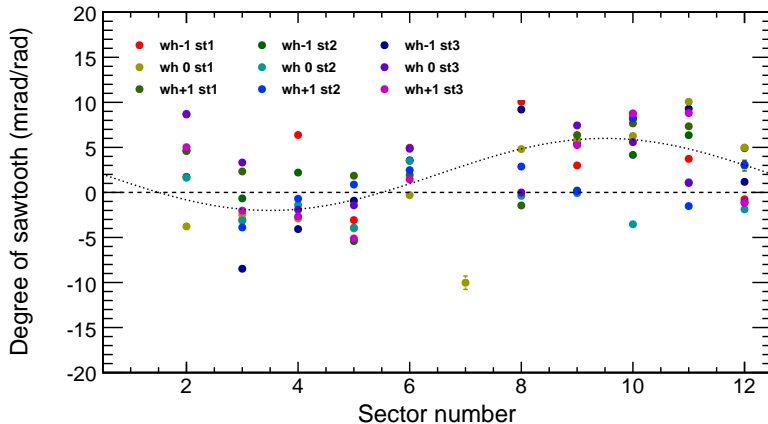
Sawtooth on all chambers

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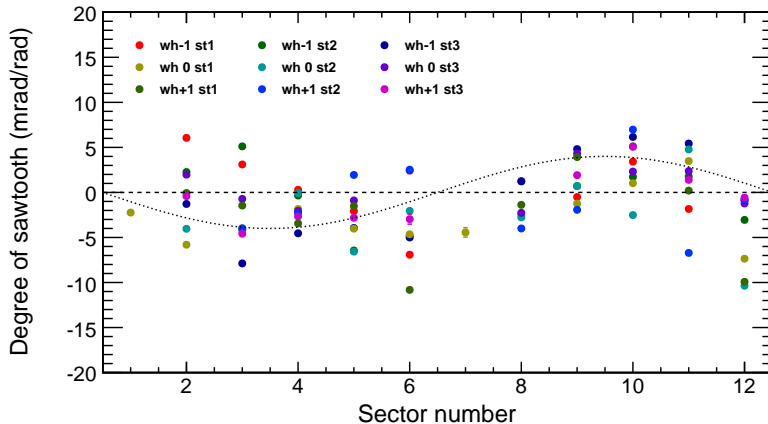
Sawtooth on all chambers

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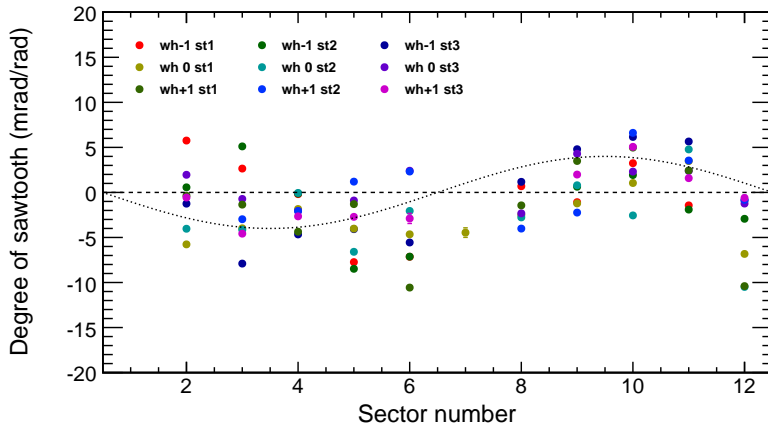
Sawtooth on all chambers

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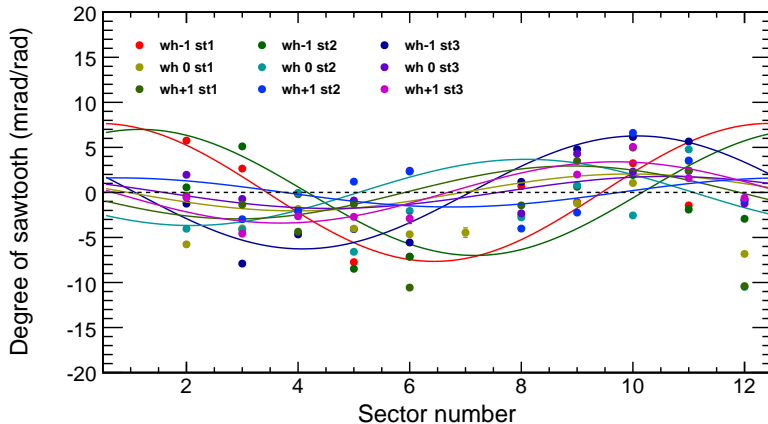
Sawtooth on all chambers

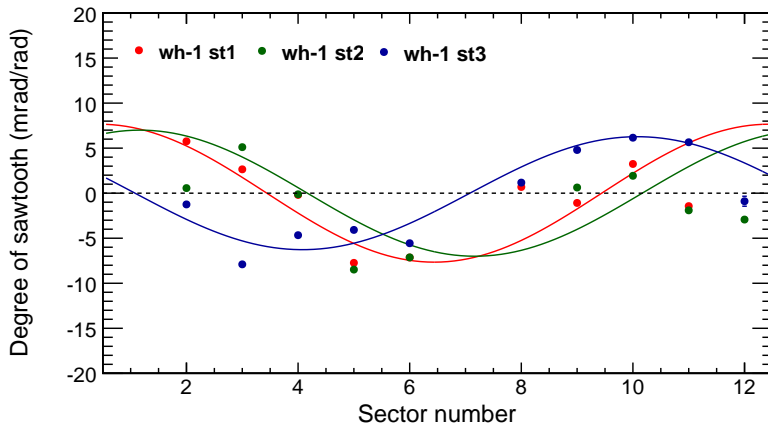
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Sawtooth on all chambers

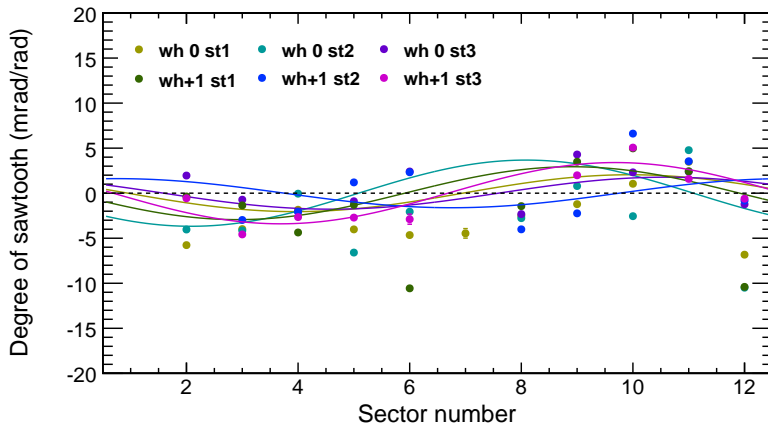
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Sawtooth on all chambers

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- ▶ New DT alignment has an effect on sawtooth, but doesn't solve it for all chambers
- ▶ Sawtooths are exhibiting a global pattern in addition to a chamber-by-chamber scatter
 - ▶ the global pattern may be from the track source
- ▶ Big improvement in tracker alignment is coming (their mean χ^2 is about 1.4 now, even without APEs), we need to use that in our next signed-off constants
- ▶ This (including the tracker input) is the DT alignment that I'll use to align the endcap