OT Module Alignment with Cosmics

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Tracking & Alignment
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Outlook

compare 2 runs

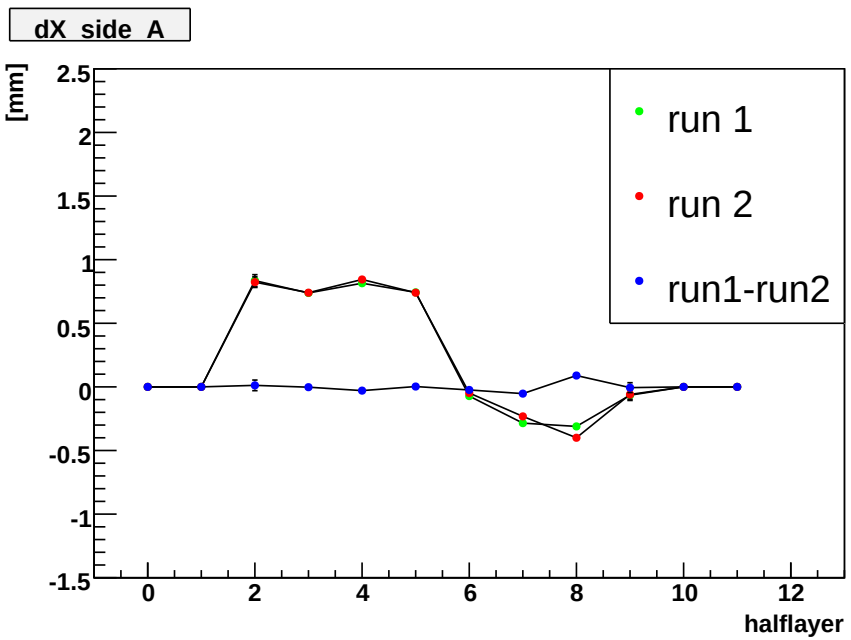
compare alignment with upstream vs downstream tracks

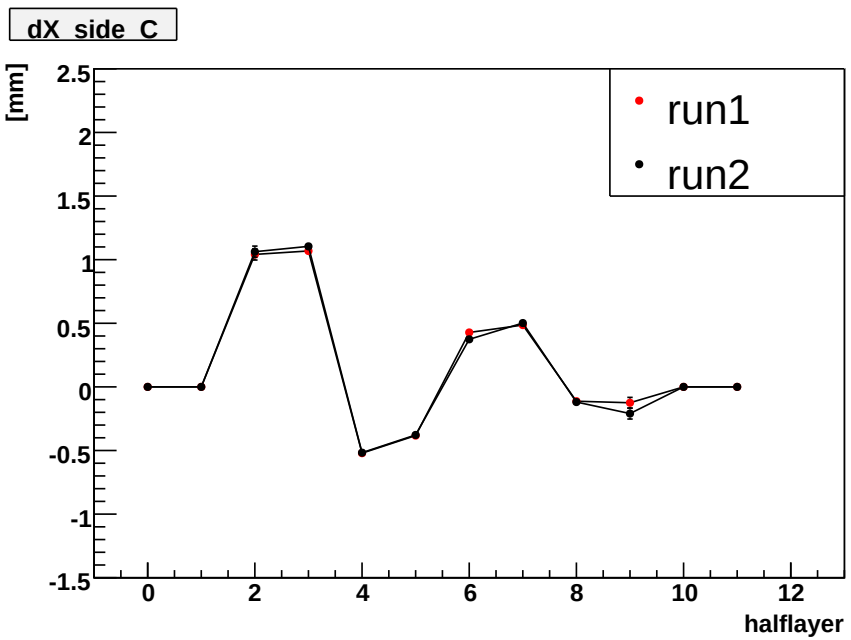
compare module alignment from Kalman and Millepede Algs

ΔX for 2 runs

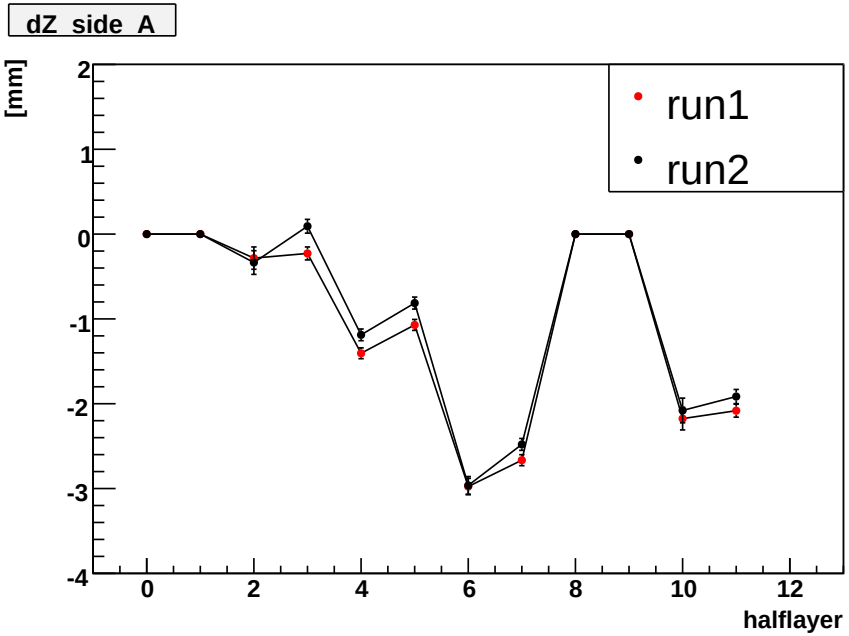
Halflayer alignment with the following data

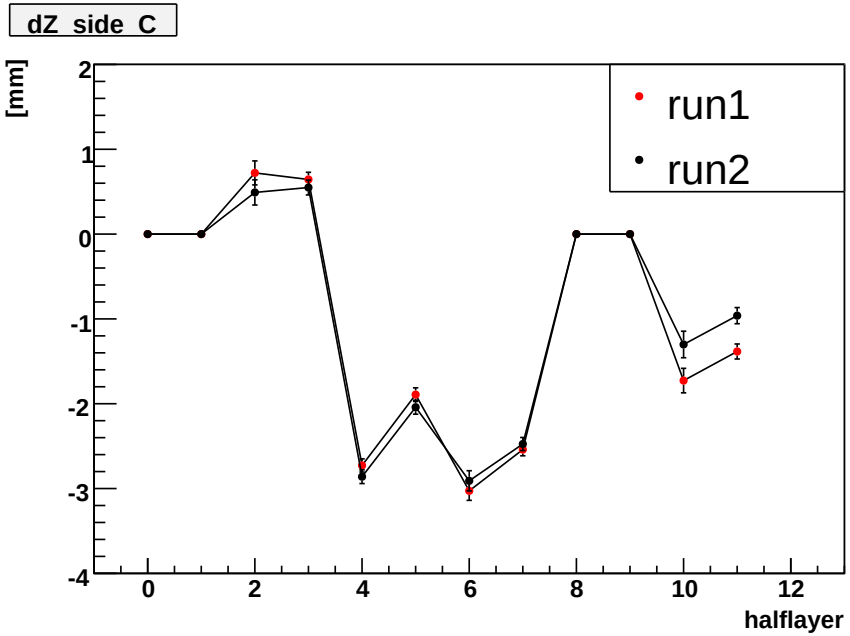
1. 'run1' : Cosmics runs 34117, 34083 (~ 10000 tracks)
2. 'run2' : Cosmics runs 34120, 331557 (~ 10000 tracks)

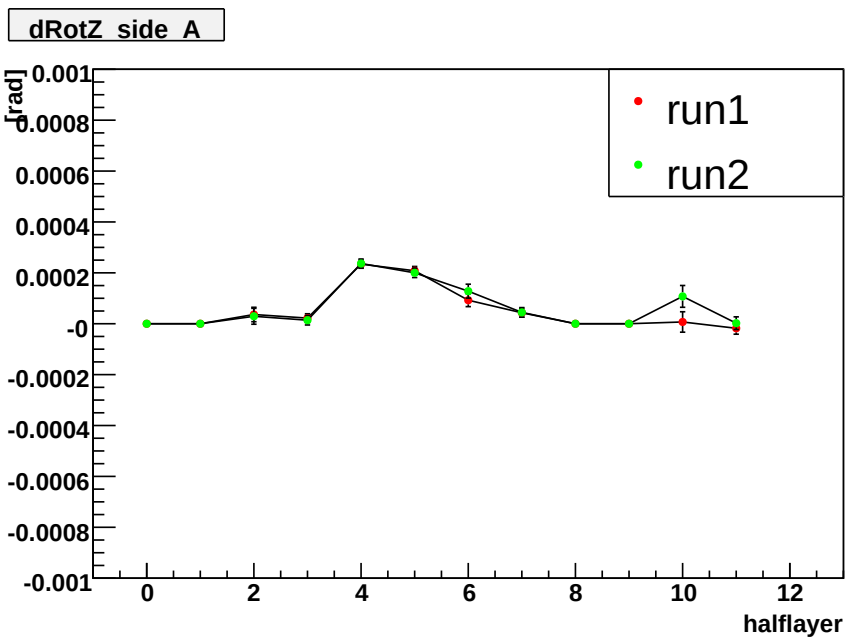


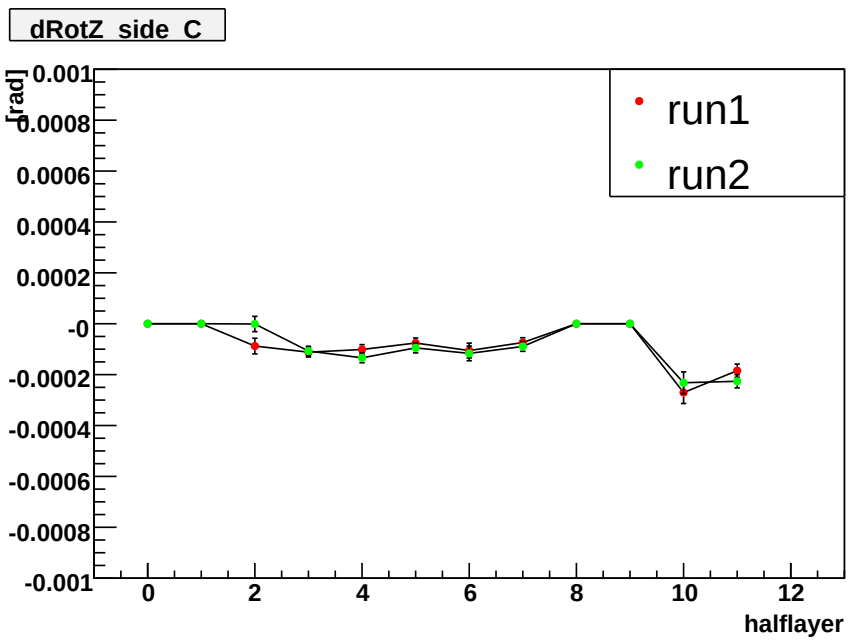


ΔZ and $\Delta\gamma$ for 2 runs









Conclusion I

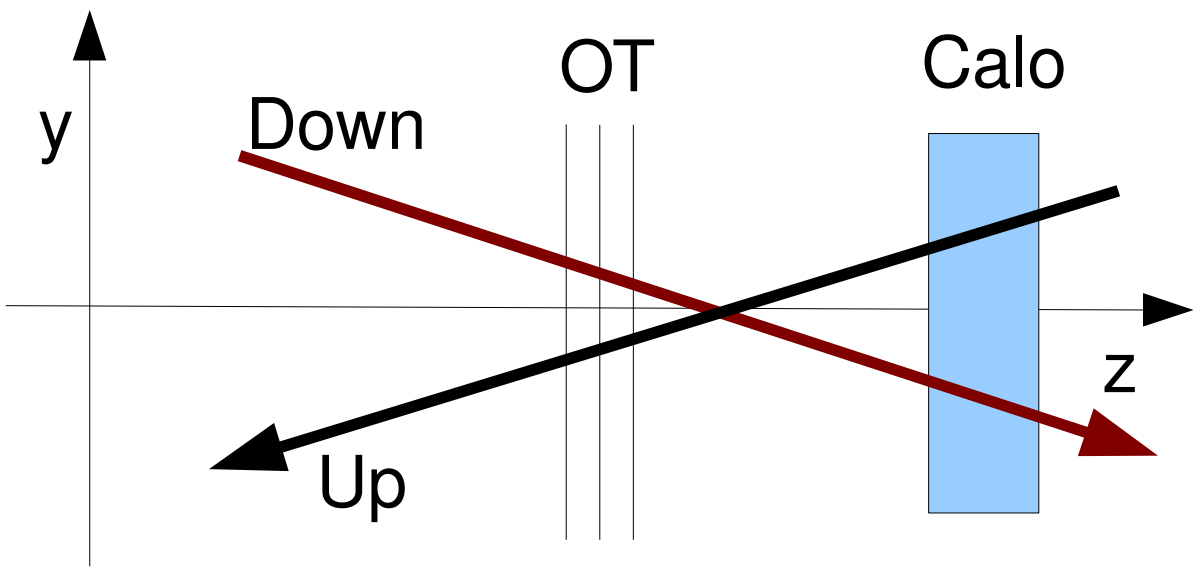
- halflayer alignment with 2 different data sets
- note: some data files have several 'bank errors'

$\longrightarrow$ **alignment constants for different runs are reasonable**

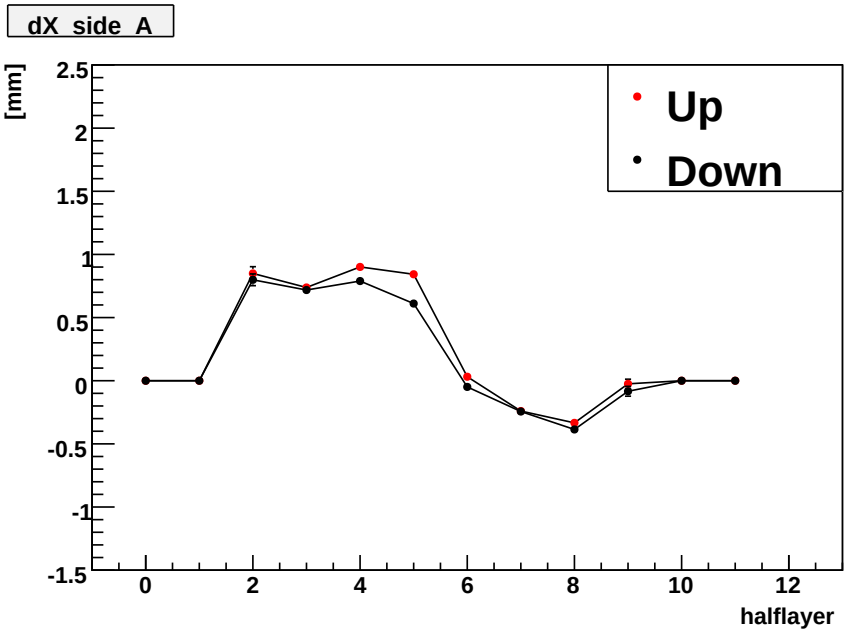
$\longrightarrow$ **alignment of halflayer works**

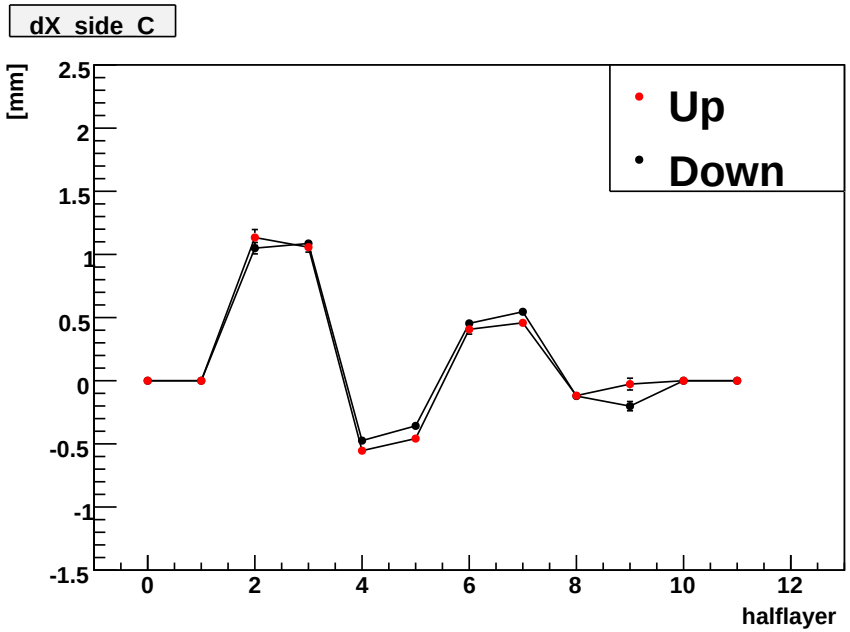
Upstream vs Downstream Tracks

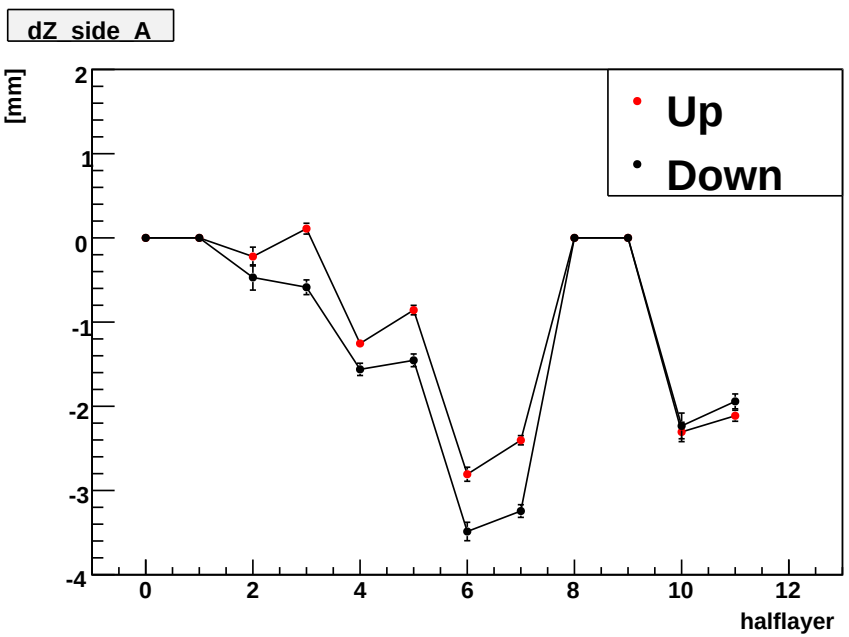
compare alignment constants obtained with
a) only upstream tracks
b) only downstream tracks

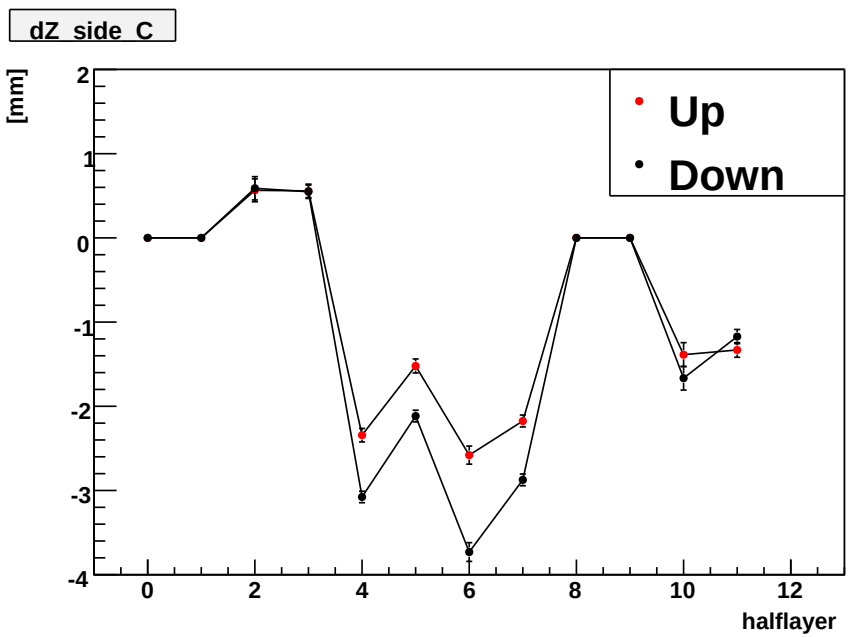


Upstream vs Downstream Tracks

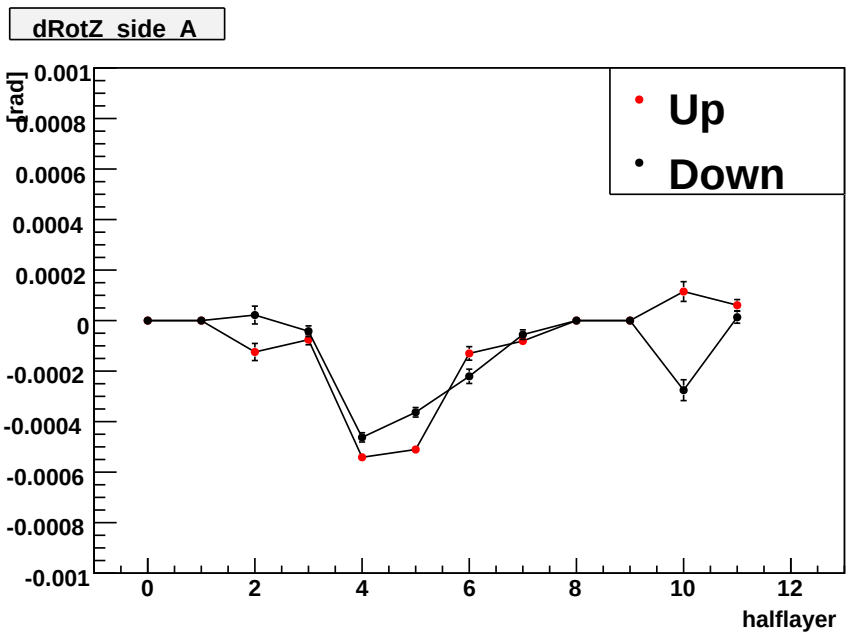


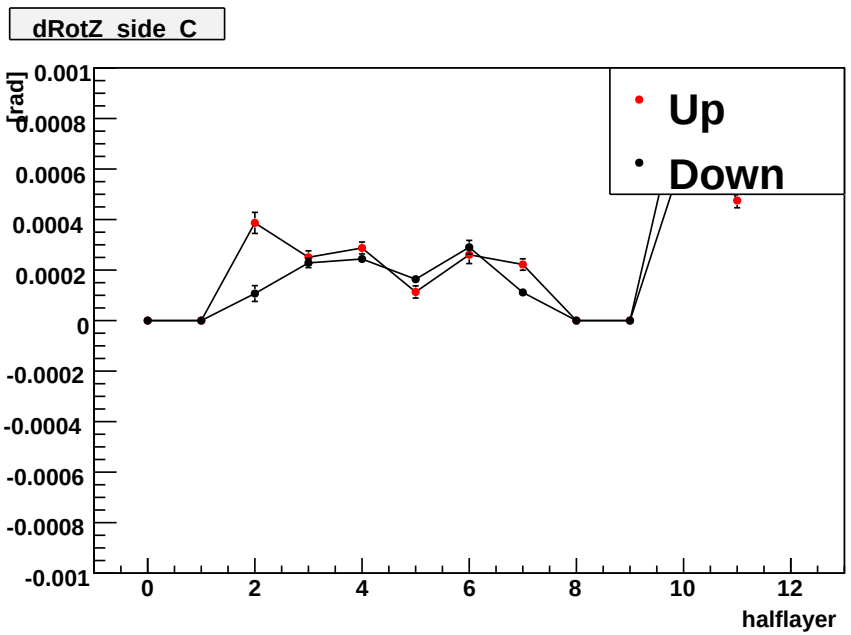






Upstream vs Downstream Tracks





'Kalman':

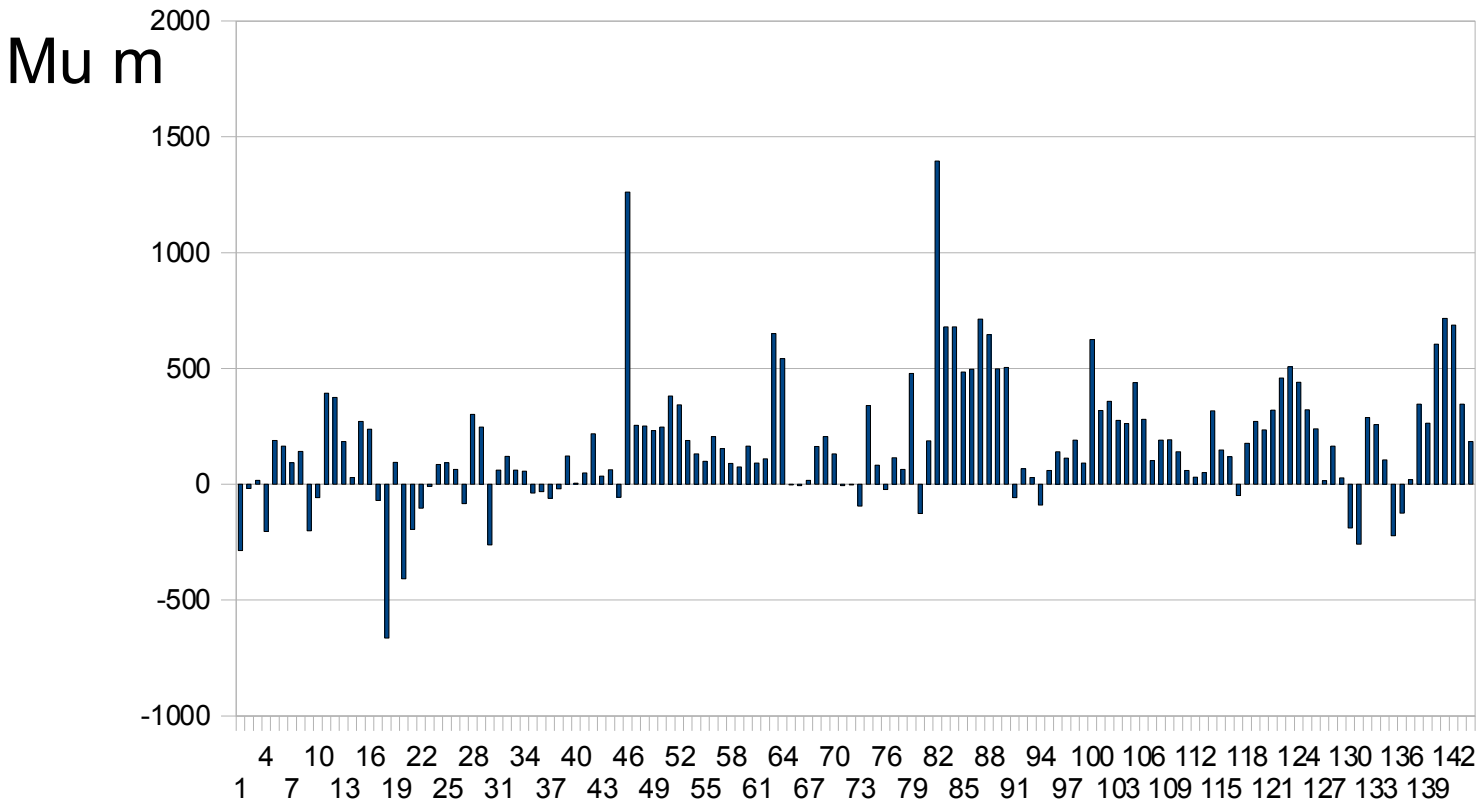
- run C-frame alignment(Tx , Ty,Tz, Rz)
- run Module alignment with information from C-frame alignment(Tx)

'Millepede':

- run halflayer alignment(Tx (Tu), Tz, Rz)
- run Module alignment with information from C-frame alignment(Tx(Tu), Tz, Rz)

Difference of Tx obtained from module alignment:

$\Delta X_i^{Kal} - \Delta X_i^{Mille}$



Conclusion

Results from 2 different runs

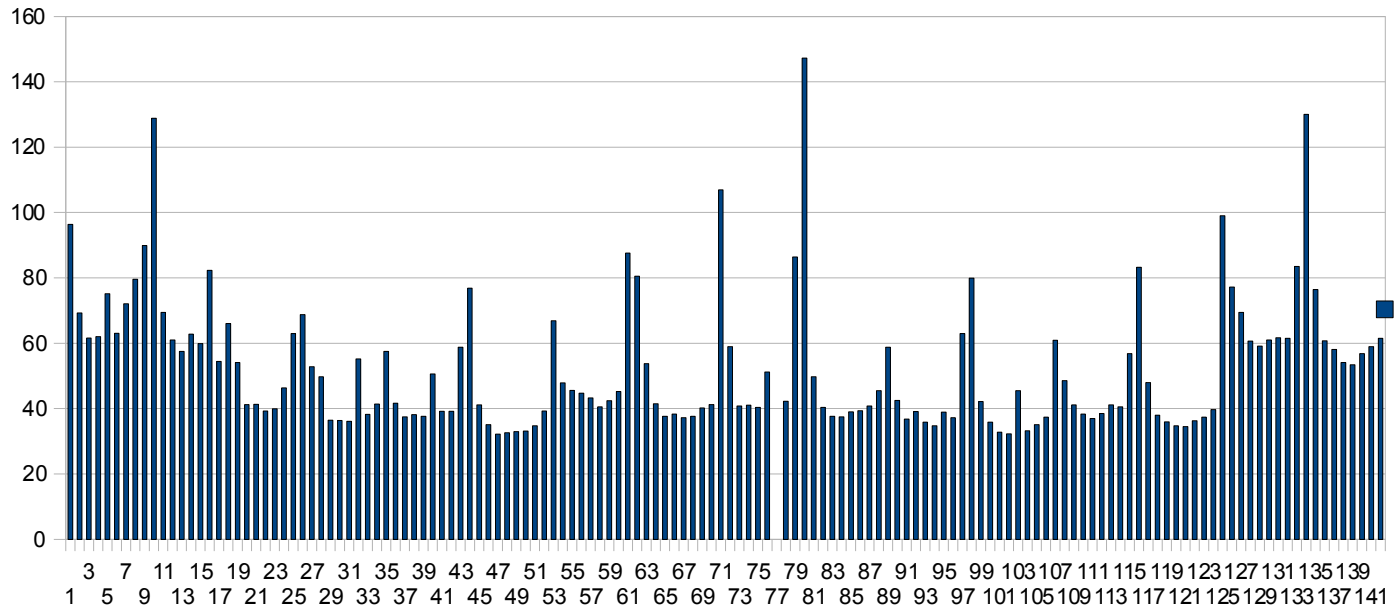
- everything fine !

Results from upstream and downstream tracks

- ok for Tx
- smaller deviations for Rz
- deviations for Z
- only just track selection (Nhits required for alignment...?)
- track quality worse for upstream tracks (more hits in station near calo)?

Results for Tx from module alignment;comparing Kalman with Millepede results

- differences in the order of a few hundred μm
- error on Tx for both $\sim 50 - 100 \mu m$
- Kalman started with C-frame alignment; Millepede with halflayers !!!
- differences due to different used tracks?
- same constraints used?


160
140
120
100
80
60
40
20
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 101 103 105 107 109 111 113 115 117 119 121 123 125 127 129 131 133 135 137 139 141
Spalte C Spalte

pede

Module Ali. : Kalman vs Millepede