
Alignment stability tests and joint constraint analysis

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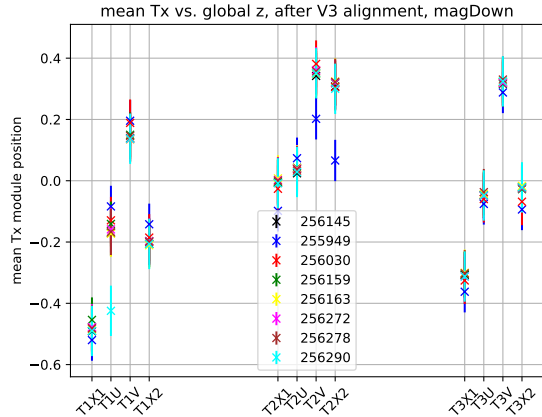
Faculty Physics

Alignment stability

- How stable is the alignment over several runs/fills?
- difference in alignment quality between magnetUp and magnetDown?

MD: black, blue, red, green

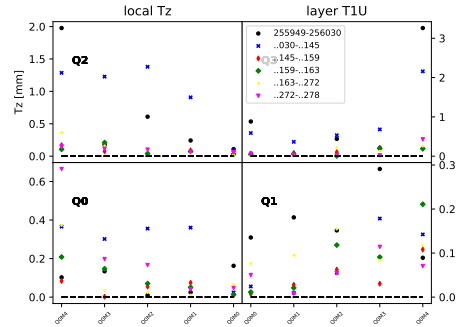
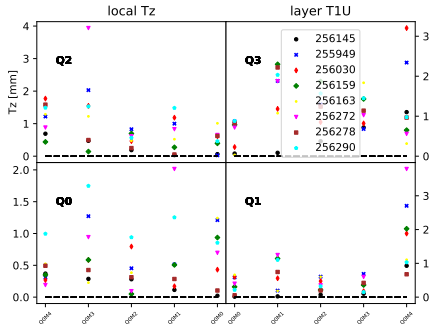
MU: yellow, magenta, brown, cyan



Config and run info

Config used:

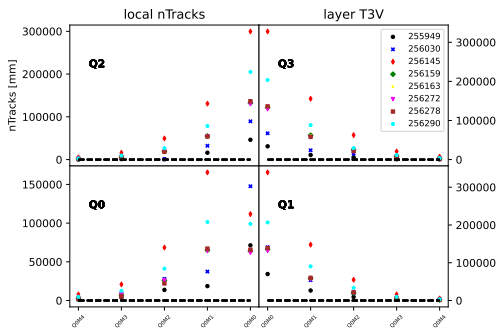
- V10 alignment tag
- DoF: TxTzRz
- surveyconstraints:
data20221115dd4hep
- lagrange constraints: ["Tx", "Tz", "Rz",
"BackLayerModules: FT/T3/X2/HL.* : Tx
Tz Rx Rz"]
- runs labeled as Good from EMTF
- fill 8489: blue + red
- fill 8491: yellow + green + black
- fill 8496 magenta + brown + cyan



nTracks

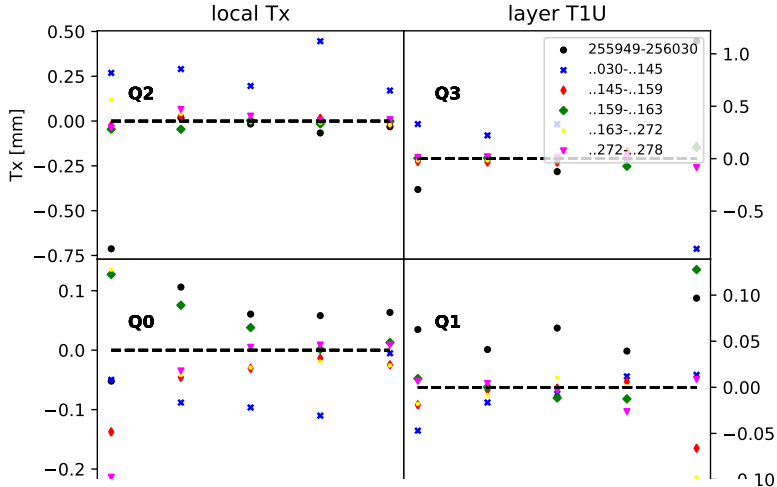
10 iterations, converged

left plot: module position in comparison to nominal (maximum of 1mm in Tx is expected)

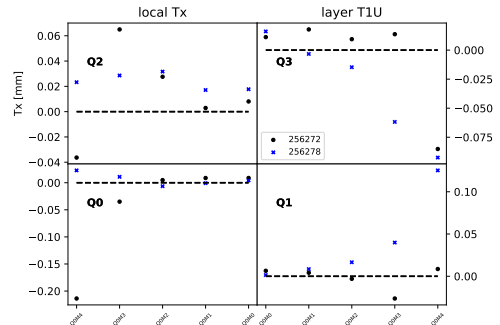
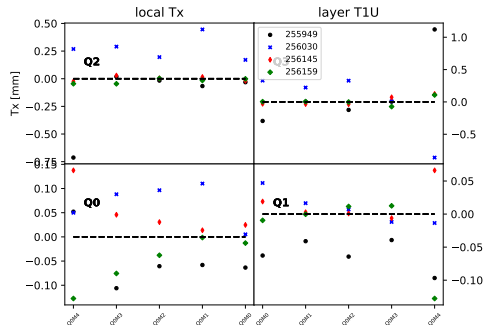


- Update from Giulia: solved in v8 alignment
- → only an issue in v3 SciFi alignment

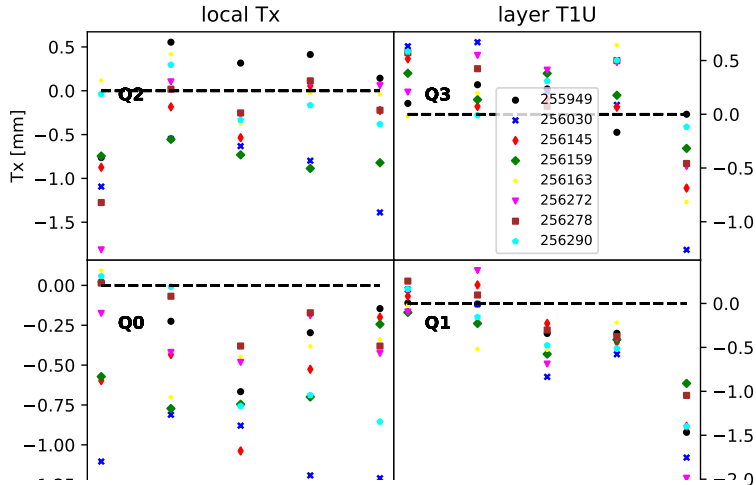
comparison between neighboring runs



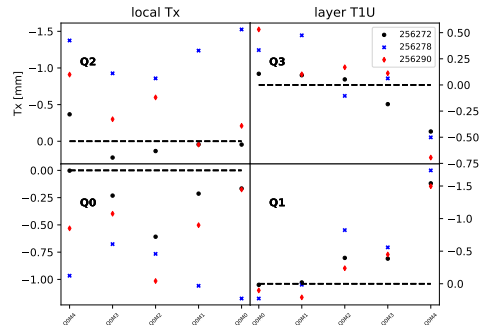
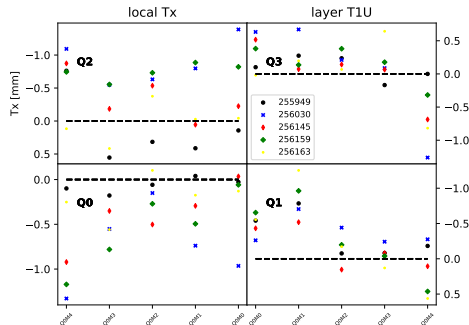
comparison between neighboring runs



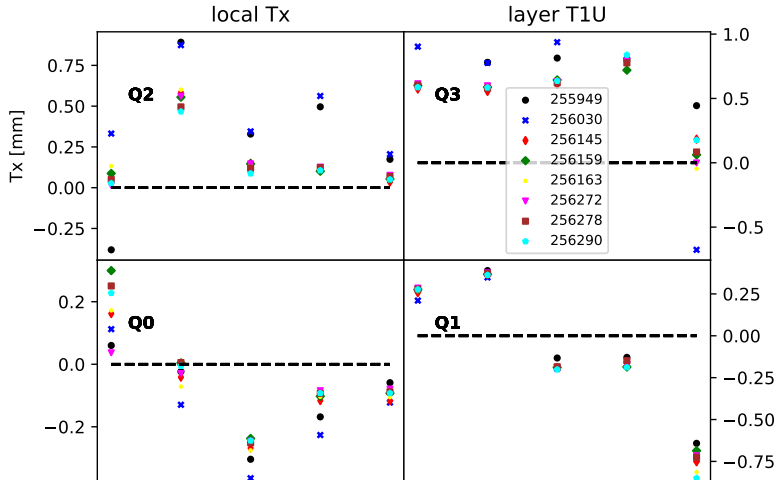
compare to survey positions

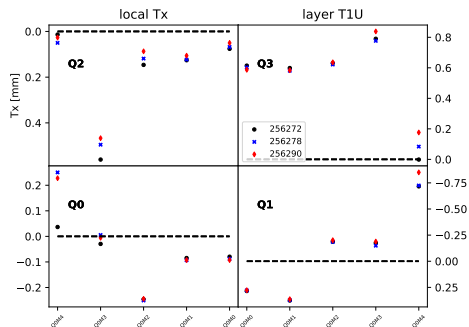


compare to survey positions



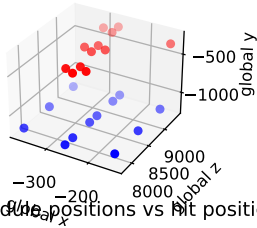
local module positions



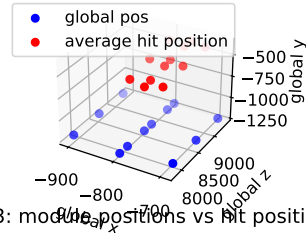


Backup

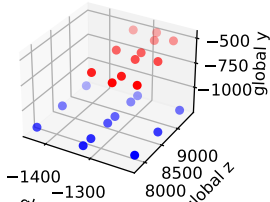
Q0M0: module positions vs hit positions



Q0M1: module positions vs hit positions



Q0M2: module positions vs hit positions



Q0M3: module positions vs hit positions

