
Stability measurement for SciFi modules alignment

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25. August 2023

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Dataset and motivation

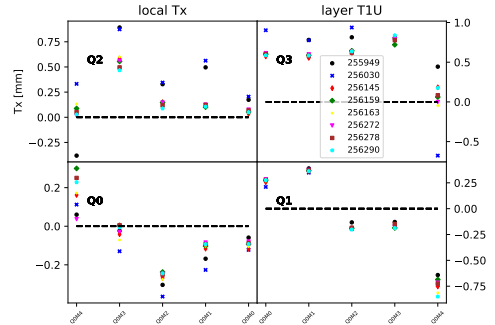
- **Dataset** contains magUp and magDown sample from 2022 labeled as "good" from EMTF
- Good: > 90% of datalinks are good
- runs from fills: 8489, 8491, 8496
- Using V10 Alignment from tag

Motivation:

- check how much the SciFi moves between runs
 - compare the position of adjacent runs in ascending order from my list of runs
- list of chosen runs: 255949, 256030, 256145, 256159, 256163, 256272, 256278, 256290
- check where the half modules are in their local frame

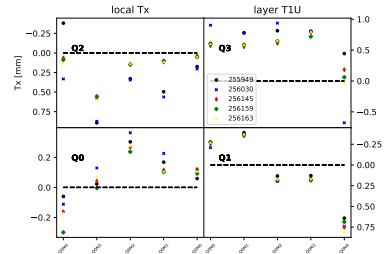
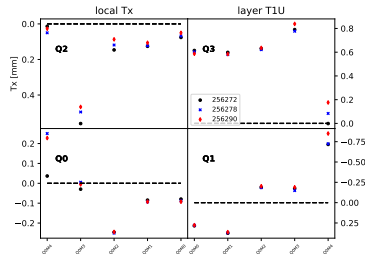
Module Positions in local half module frame

- Runs 255949 + 256030 were from fill 8489
- Optimal fine timing implemented in 256145 (afterwards)
- Positions of other runs compatible (reminder: MU and MD mixed)



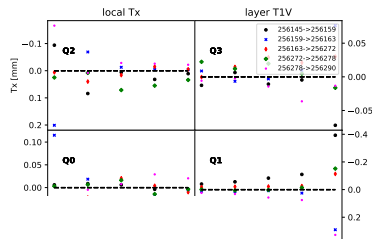
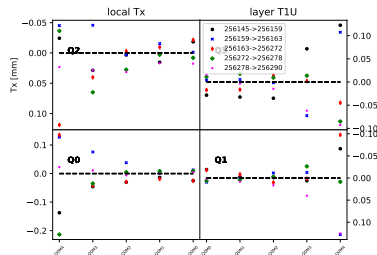
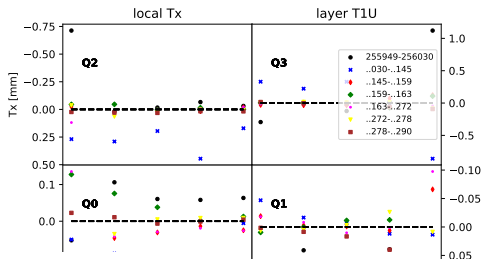
Module positions: magUp and magDown in x-direction

- magUp and magDown runs are compatible respectively
- Module positions did not change much except for the black and blue runs



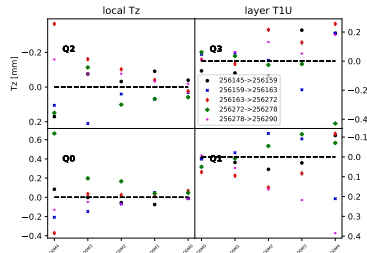
Difference between runs: Tx

- Outer module (M4) always worse than the inner modules (a lot less events)
- Largest movement: T1VQ1M4
- other layers move a maximum of 200 μm in M4, less than 100 μm in M0-M3



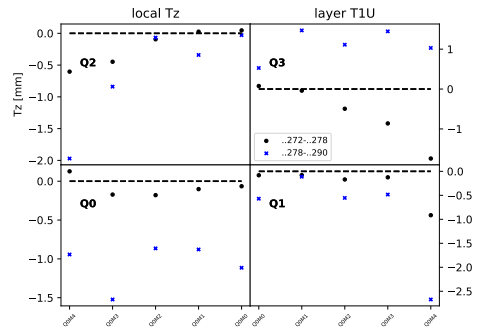
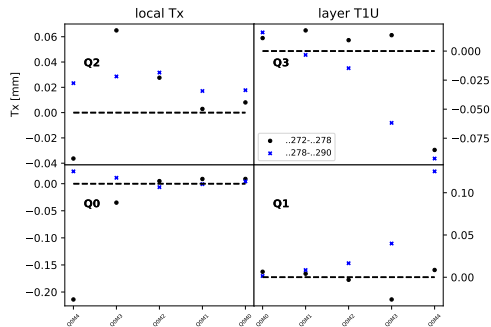
Difference between runs: Tz

- Tz a little worse in performance as expected
- similar picture as for Tx
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- The change in module position from run to run is a maximum of 100 μm for the modules M0 \rightarrow M3 in Tx
- This is for runs from the same fill, or if there are no big changes between fills
- M4 moves at max 400 μm
- there is no visible difference between magUp and magDown polarity

Backup



Backup

