

Detector configuration issue



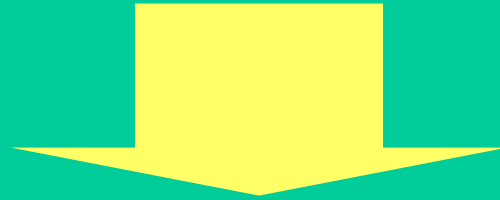
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- Detector configuration has major impact on design choice

Two possibilities:



Tree (or more) stations - one front and one back + one
(thin) central

or

Two super-stations (= two close stations) - one front
and one back

Resolution issue:

- In general resolution is given by lever-arm and resolution on each point; for each point ~100% detection efficiency (what is thin detector?)
- 3 points require one more pockets (and BPM) and super-stations perhaps more planes
- Easier alignment for SS



- Bottom-line: SSS favored for resolution

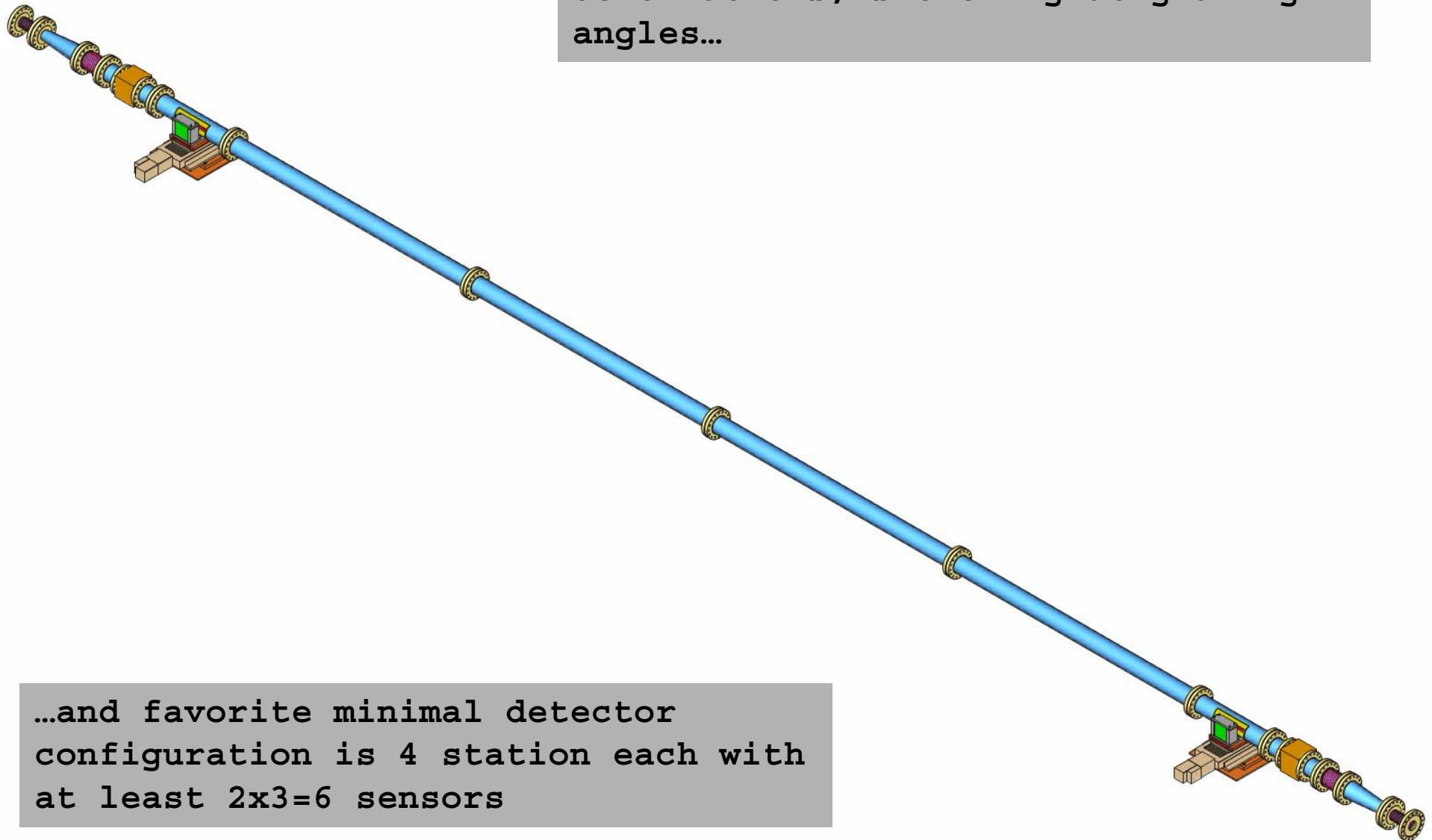
Number of planes/sensors per point:

- For each point ~100% detection efficiency is needed (Note: for SSs 1 of 4 points can be missing)
- Same (or not?) x and y resolution required: number of high resolution planes for x or y should be 3 or 4 (?)
- SSs should be fine with 3 hires planes, the other needs 4? If so one has then in total 3x4 vs 4x3...
- Bottom-line: Both have similar number of sensors

Pattern recognition:

- Each SS builds own track segment with reconstructed x, y with angles, so one can swim tracks forward or backward between SS
- For 3 points: single stations have at least 10 times worse pointing capability, and central station is only at half distance... so probability of mismatch and track loss is higher...
- But 3 point solution can build track segment from front and middle station, and argument is opposite (middle plane crucial)
- Bottom-line: Super-stations should do similar/complementary in pattern recognition

Avoid problem of 7m long thin wall - deformations, showering at grazing angles...



...and favorite minimal detector configuration is 4 station each with at least $2 \times 3 = 6$ sensors

Discussion/further studies

- Super-station solution looks better?
- Need (toy?) Monte Carlo study in more detail?
- Or, can we make any decision already now?
- Let's start discussion...