

General remark:

- In-depth study of at least one realistic layout simulated with SICBMC is very important and urgent.
- We need to agree on such (a) layout(s)

What is missing ?

- Main open question at our last meeting: **chamber x-positions**
- Since then we have a better understanding of the situation
 - > x-projectivity is important (-> Giuseppe's presentation)
 - > x-projectivity could be introduced in the same way as y-projectivity:

$$X_{\text{chamber-center}} = (X_{\text{station-center}} / Z_{\text{station-center}}) \times Z_{\text{chamber-center}}$$

Some comments:

- shorter chambers in R4 are preferable from performance point of view
- A possible value for **chamber overlap in x** can be obtained from geometrical cluster size (cs) considerations (-> 2 layers 4.5cm apart give a cs of ~1.3 in M2)
- FOI alignment should not be too much of a problem if the chambers are in the same relative z-position of a station
 - > t.b.c. by performance study
- Effect of left/right asymmetry can be "washed out" using y-rows mirrored at the $x_{\text{station-centre}}$ axis, as implemented in present geometry
 - > t.b.c. by performance study
- Split detector with (mirrored at z-axis) seems not advisable, as the realistic gap size in the middle would be $2 \times 4.5\text{cm} = 9\text{ cm}$ (->introduces large inefficiencies)

Comments on a 2 x 2-gap chamber layout:

- In order to fully explore the possibilities of such a design **without** increasing the number of chamber types, one should have two fully independent double gap chambers.
 - > doubles number of pieces to be assembled, gas connections etc.
 - > a "head to head" configuration in M1 (only 37cm space), would be most likely unavoidable (- 2cm (moving), -4 cm support = 31cm / 8 = 3.8cm /chamber -> difficult)
 - In a "full overlap" configuration the distance between chambers in a y-row is even larger than in a 4-gap chamber configuration
 - In a "head to head" configuration one would have 1 pad $\pm x_{proj}$ shift between the two chambers.
 - > Major complication in stations M4 + M5, where we have coarse x-granularity
 - > Such a shift is impossible in the inner part of M2 + M3, where we have a combined Anode/Cathode readout
 - > border between 4-gap and 2 x 2-gap in "head to head" configuration difficult
 - On-chamber-OR of two layers would have to be done in an independent board (not directly on the FE-board), as one would have independent chambers
 - > requires short links from FE-boards
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