Special LHC run for Magnet Stations

M. Bettler[1], J. Bhom[2] , P. Billoir[3], M. Chrzaszcz[4], C. Da Silva[5], M.Durham[5], R.Greim[6], W.Karpinskig[6], T.Kiring[6], M. Martinelli[4], M. Pikies[2]

[1] Cambridge, [2] IFJ PAN, [3] LPNHE, [4] CERN, [5] LANL, [6] Aachen

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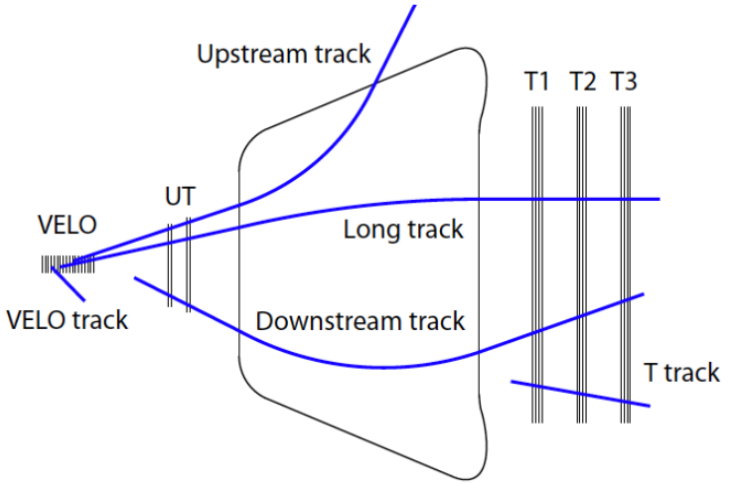
Where our tracks are?

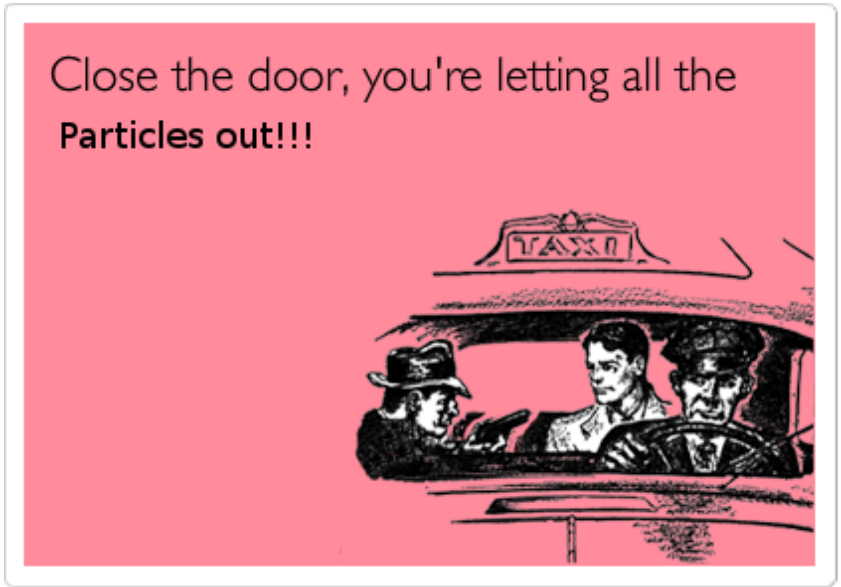
⇛ The upstream tracks have rather poor momentum resolution: $\frac{\Delta p}{p} \sim 15\%$.

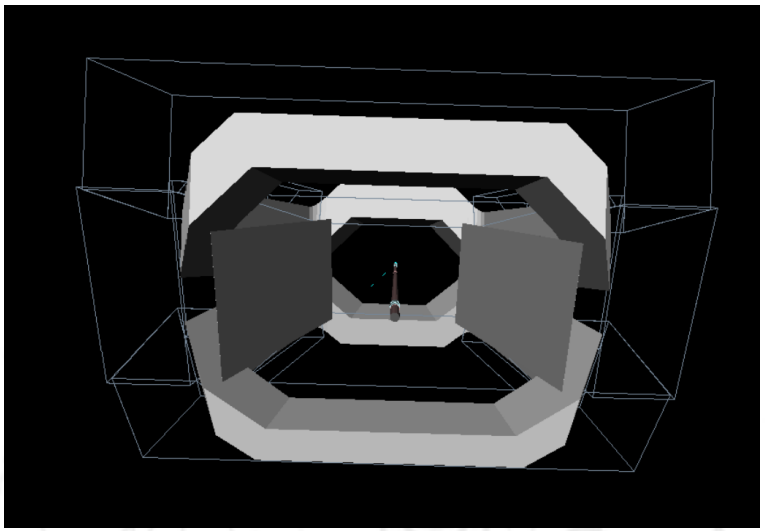
⇛ The particles die after short and sad (for physics) life in the magnet yoke.

⇛ If one put chambers in the magnet stations, one could record the particles before they death.

⇛ This will not increase the material budget of the rest of the detector.







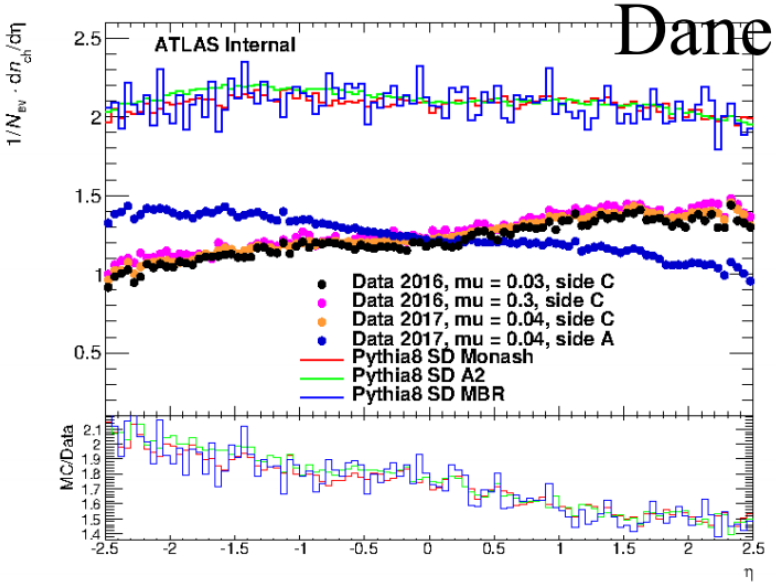
Studies done so far

⇛ We have performed studies:

- Radiation: Dosimeters have been put in the magnet region to measure the radiation dose.
- For sensitivity studies the MC was used.

⇛ These of course are important studies but having a data driven method is the best.

⇛ Often our MC prediction are wrong ;)



The proposal

$\Rightarrow$ We would like to propose of obtaining a sample of lower p_T tracks from data.

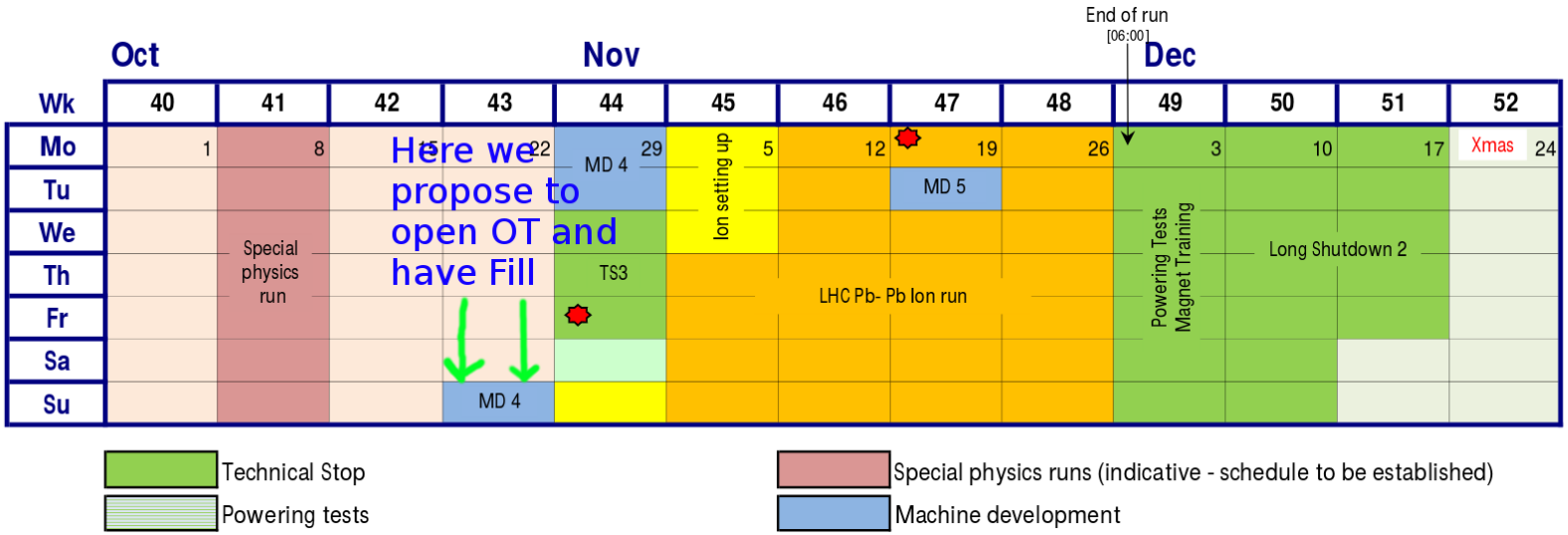
$\Rightarrow$ There are essentially two possibilities: (many thanks to Niels for discussion and guidance):

- Make a run with a $50\ \%$ of magnetic field.
  - Direct access to particles that would be swapped by magnet.
  - Not much work on our side
  - Needs additional 10-12h for machine to understand our magnetic field.
- Run with nominal magnet and open the OT.
  - No work for the LHC people.
  - Needs some extrapolation on our side.
  - Needs 1-2h access to open the OT.

Our suggestion

We would propose to go with the second option not to disturb the LHC.
For LHCb we would sacrifice one full fill.

The proposal -time table



⇛ We proposed to have the last Fill of pp collisions with OT opened.

⇛ There is a stop after it so we can close OT without any beam lost.

⇛ We would need only around 2h to open the OT.

Please let us know what you think about this proposal.

Backup