TB model improvements in Mokka and status of MC production

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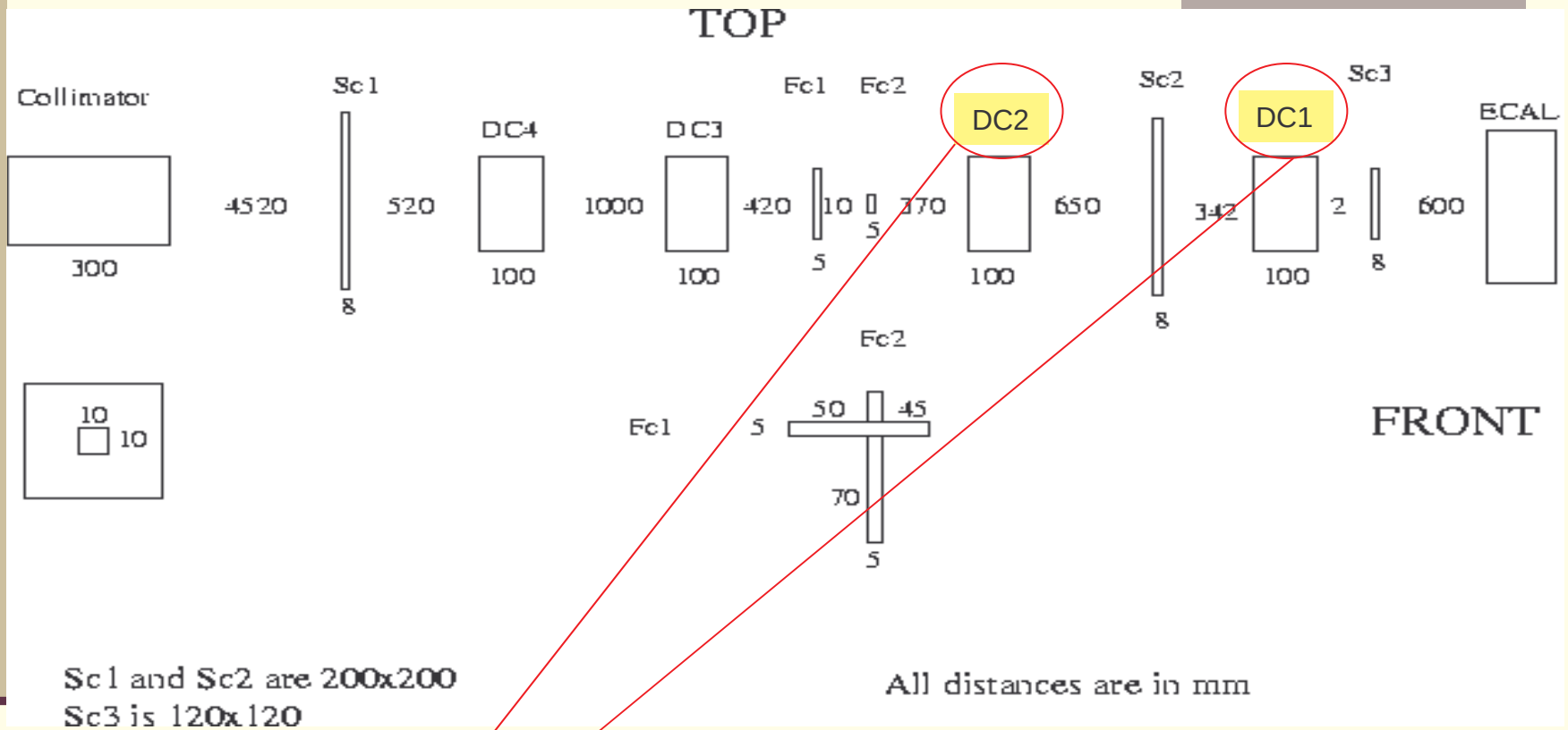
Possible improvements in tb simulation

- Real drift chambers in the Desy setup give separate measurement of X and Y position on hits
  - Fist half of the chamber gives X position, second half gives Y position
- As chambers are simulated in Mokka v06-03p01, each hit has an X and Y position
  - Re-write driver to match real chambers as much as possible
- At the digitization stage, we would like to use drivers that are independent of the set-up (Desy or Cern)
  - Need to write one single collection of hits instead of one collection per chamber

New DCH driver for Desy0506 model

- Currently testing a new DCH driver
  - Each chamber is built assuming two different gas volumes (one for X and one for Y)
  - Hits in each gas volume are simulated as TRKHit (==SimTrackerHit in LCIO)
    - (x,y,z) postion of hit is generated
    - Digi code will have to consider the appropriate coordinate (x or y) depending on the layer
  - Total of 8 layers (2Xchambers)
  - Test model available in the DB
    - TBDesy0506_dchxy_new
    - New driver only in HEAD of Mokka

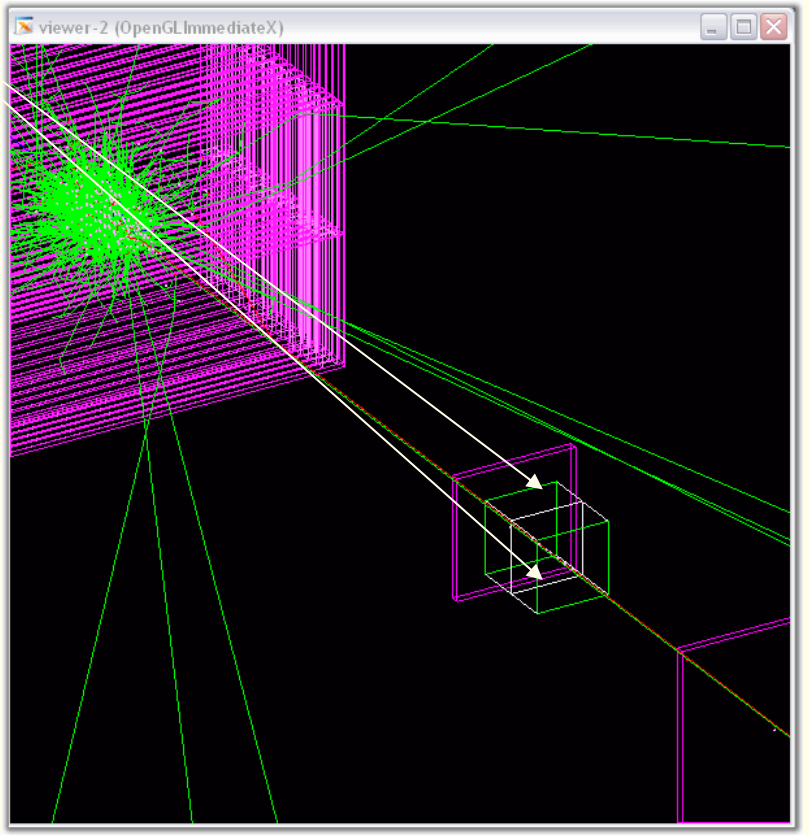
TB layout Desy0506



Swap DC1 and DC2 to facilitate in digi and tracking code

New chamber layout

- Two separate volumes



- One single hit collection
  - TBdchXY02_dchSDxy0
  - Use cellID to distinguish hits from each layer:
    - DC1 -> layer 0 (X), 1 (Y)
    - DC2 -> layer 2 (X), 3 (Y)
    - DC3 -> layer 4 (X), 5 (Y)
    - DC4 -> layer 6 (X), 7 (Y)

Status of MC production

- Some MC events have been produced at RHUL and RAL using Mokka v06-03p01
  - Sample generated using Desy and Cern models (0806 and 1006)
    - Mainly used for testing of digi and tracking code
    - Old coordinate system
  - 10K events/sample for Desy and 50K events/sample for Cern
  - Desy: energies from 1 to 6 GeV (Hakan Y.)
  - Cern: e^- and π^- samples from 6 to 50 GeV
    - Some problems with 50 GeV runs

http://www.pp.rhul.ac.uk/~calice/genEvt/tbeam/Mar06/

Conclusions

- Tests are on-going to match as closely as possible the simulated DC to the real ones
  - Once the test on the Desy chambers will be finished, will check any possible improvement on Cern ones
- Current driver available in HEAD of Mokka
  - Will be part of the next Mokka release
- Some MC events have been produced
  - Mainly intended for tests of Digi and tracking code
  - All simulated files can be downloaded from WEB