Inside the new Mokka release

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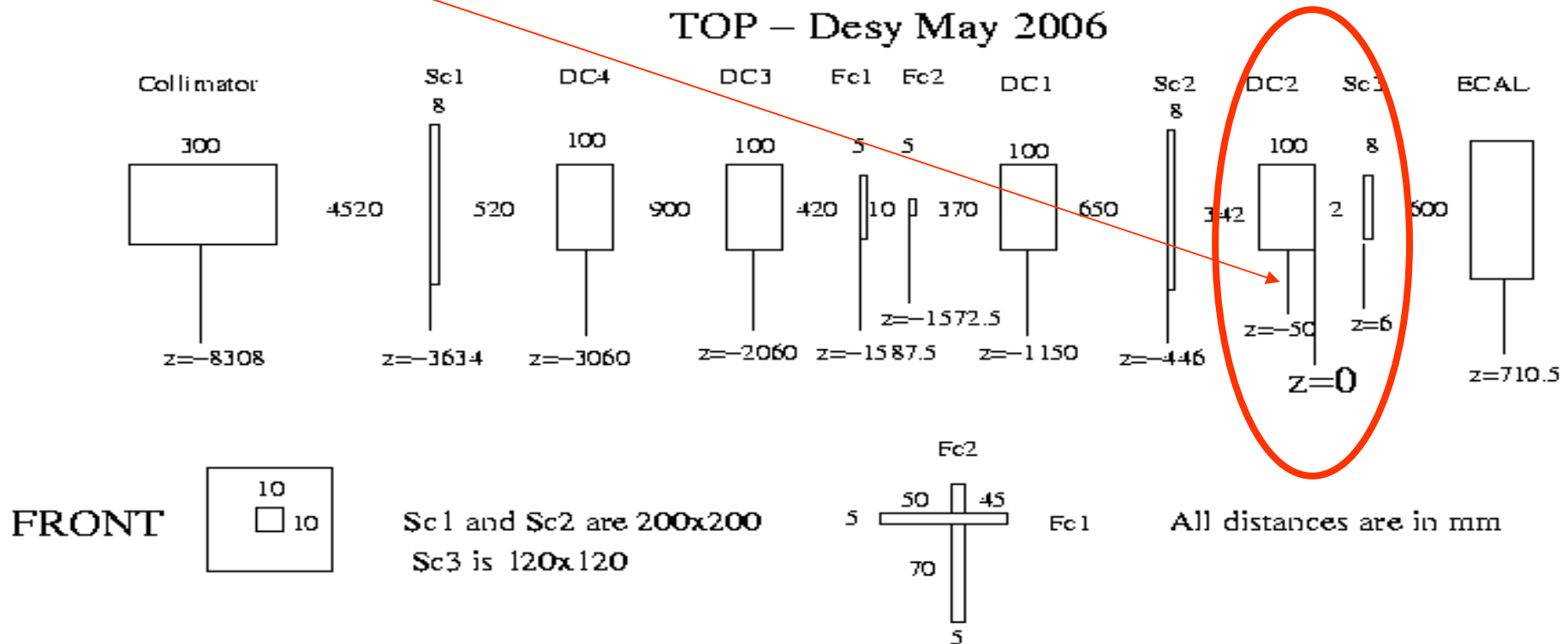
Towards Mokka 06-03

- New version of G4 (8.2) available, but several problems reported by LHC experiments
  - □ Use 8.1.p02 for Mokka 06-03 and wait for the patch to 8.2 and, if OK, link Mokka against it in next release
    - Changes in the Makefile due to changes in the physics_lists
- New version of LCIO recently released (v01-08-01)
  - □ Test of current Mokka HEAD with it is OK
- New detector models for the Desy and CERN test beams with change in the coordinate system
  - □ New coordinate system attached to DC instead of back of the ECAL
- Several new features are under development

Desy 2006 test beam model

- New model for the simulation of the Desy test beam: TBDesy0506_01
  - Position of all detectors is computed from new origin

TOP – Desy May 2006

| Collimator | | Sc1 8 | DC4 | DC3 | Fc1 Fc2 | | DC1 | | Sc2 8 | DC2 | Sc3 | ECAL |

300   4520   520   100   900   100   420   5   5   10   370   100   650   342   100   2   8   600

z=-8308   z=-3634   z=-3060   z=-2060   z=-1587.5   z=-1572.5   z=-1150   z=-446   z=-50   z=6   z=0   z=710.5

FRONT   10   10   Sc1 and Sc2 are 200x200   Sc3 is 120x120

Fc2   50   45   5   70   5   Fc1   All distances are in mm
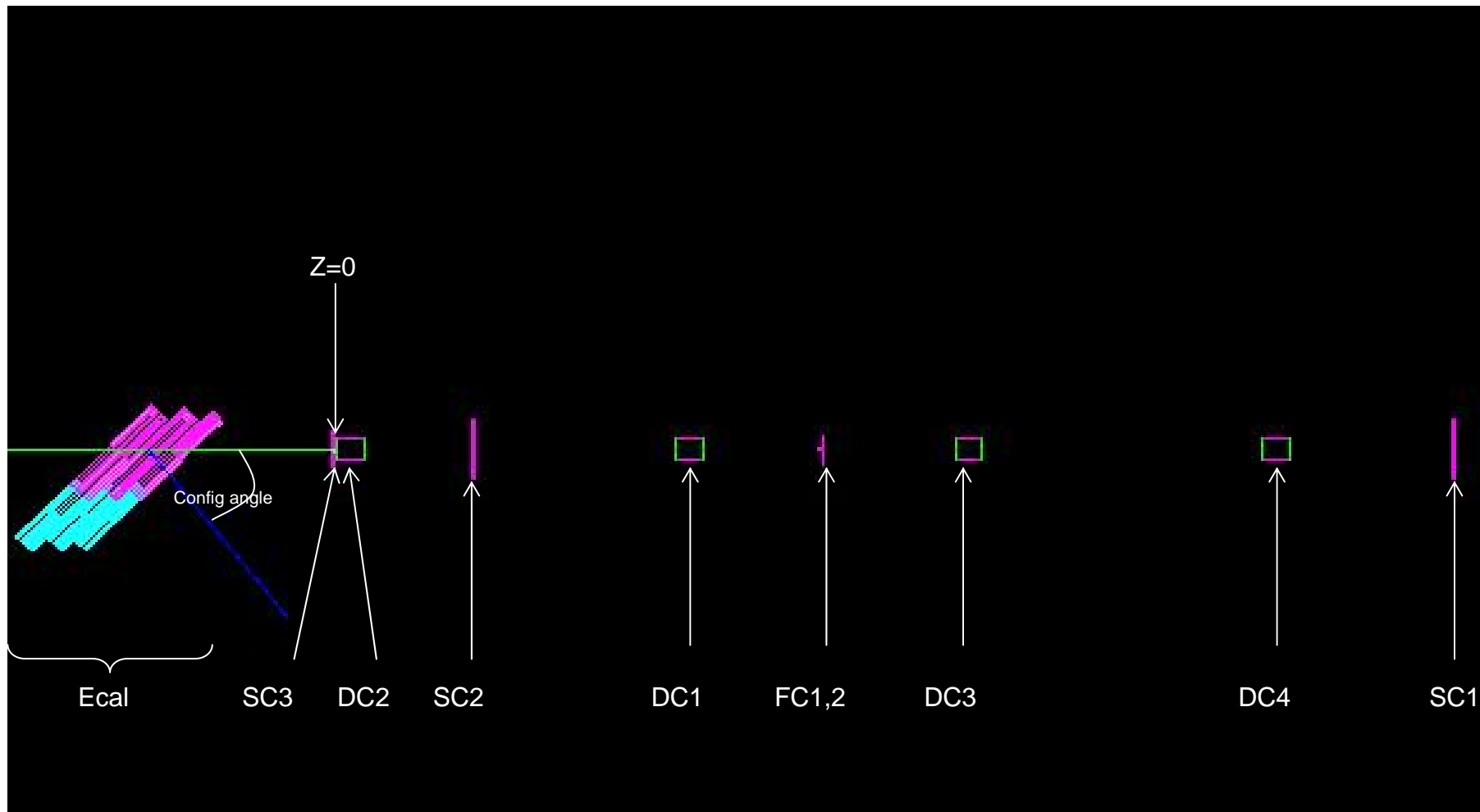
Desy 2006 test beam

- All tracking detectors now remain fixed when the ECAL is rotated
  - No more dependence from config_angle in drivers
- Hits in the scintillators are generated as calorimeter hits
  - One hit per detector
- TCMT (G. Lima):
  - geometry driver updated to the new coord. system,
  - ability to perform alignment adjustments (x-y direction) would require additional changes to the TCMT driver

New ECAL implementation

- For all three new models the ECAL modules are rotated and shifted
  - TBCern1006_01 – only normal incidence should be used
- Rotation angle and module shifts are specified by the detector setup at run-time
- Rotation angle given as global parameter in steering file
  - Possibility of simulating deviations from ideal values (only for Ecal now)
    - /Mokka/init/detectorSetup TB10
    - /Mokka/init/globalModelParameter configuration_angle 12.5
    - (in any order)
  - At run-time:
    - Real config-angle = 12.5°
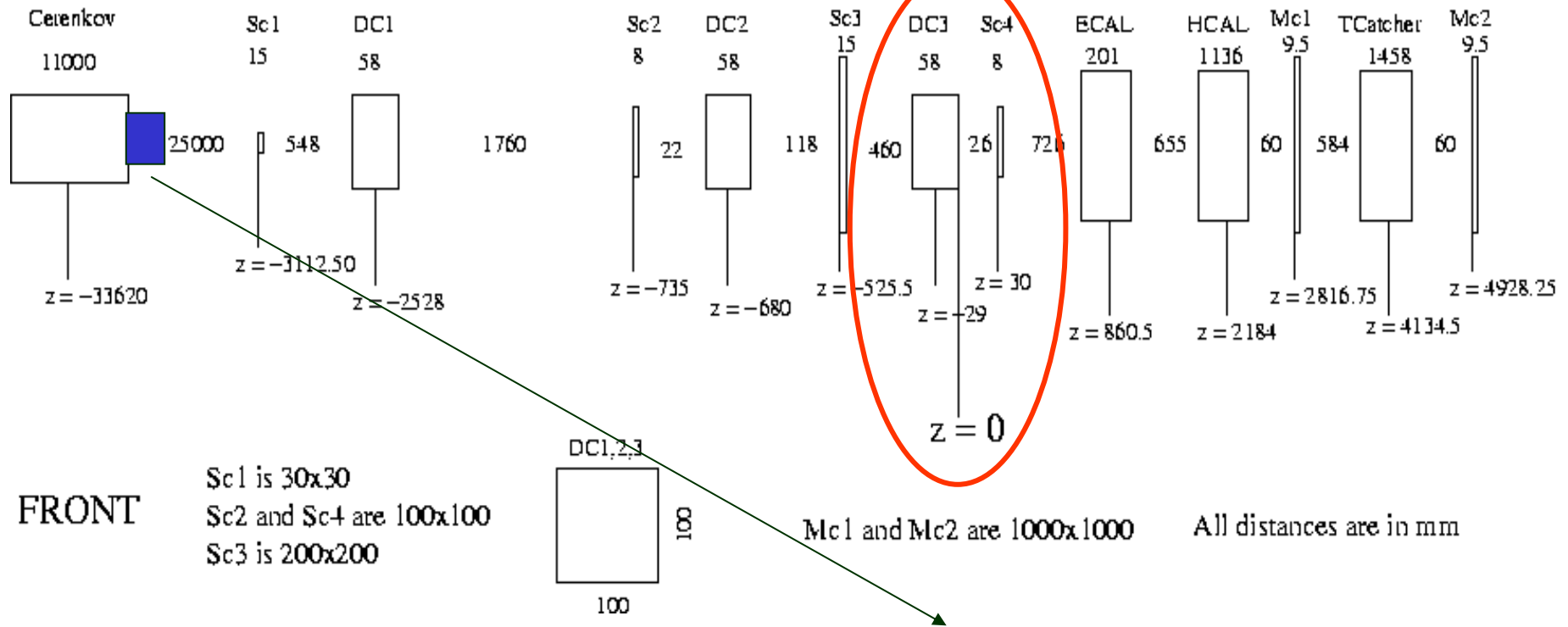   - Module shifts according to ideal angle of 10°

TBDesy0506_01 with ECAL@45º

CERN Aug 2006 test beam

- New model for new coordinate system: TBCern0806_01

TOP – CERN August 2006

Cerenkov	Sc1	DC1	Sc2	DC2	Sc3	DC3	Sc4	ECAL	HCAL	Mc1	TCatcher	Mc2
11000	15	58	8	58	15	58	8	201	1136	9.5	1458	9.5

25000   548   1760   22   118   460   26   726   655   60   584   60

$z = -3112.50$

$z = -33620$

$z = -2528$

$z = -735$

$z = -680$

$z = -525.5$

$z = 30$

$z = -29$

$z = 0$

$z = 860.5$

$z = 2184$

$z = 2816.75$

$z = 4134.5$

$z = 4928.25$

FRONT

Sc1 is 30x30
Sc2 and Sc4 are 100x100
Sc3 is 200x200

DC1,2,3

100

100

Mc1 and Mc2 are 1000x1000

All distances are in mm

~10m long vacuum pipe downstream of Cerenkov not yet simulated

CERN Oct 2006 test beam

- **New model for new coordinate system: TBCern1006_01**
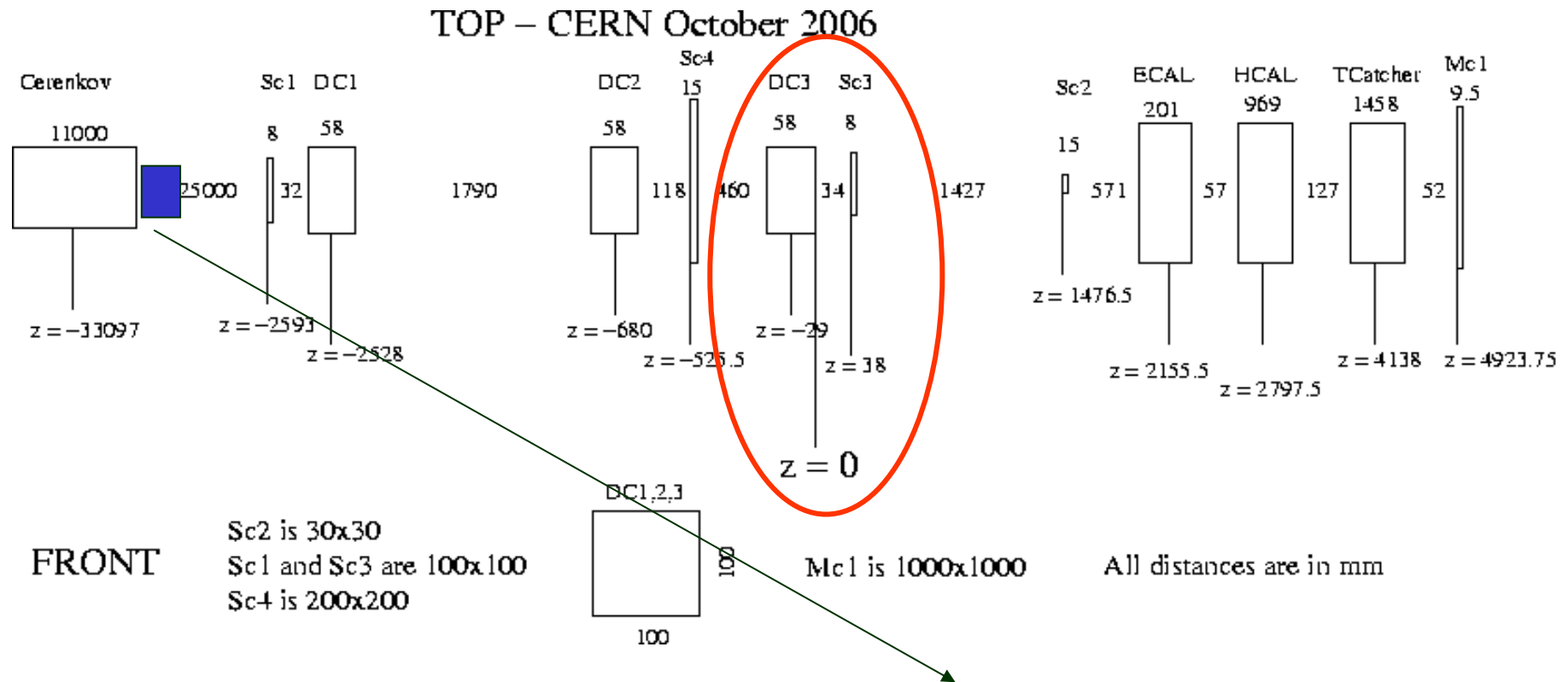
~10m long vacuum pipe downstream of Cerenkov not yet simulated

Other developments in Mokka 06-03

- Fetching MySQL Fields by Index (A. Vogel)
  - Extension of bug fix on macOS for queries to tables of a tmp DB
  - MySQL Wrapper commands improved:
    - Database::fetchDouble, Database::fetchInt, Database::fetchString
  - can now address fields in the result of a MySQL query not only by name, but also by index (starting from zero).
- Test-magnet setup with TPC prototype (P. Krstonosic): in progress
- New detector models LDC_00_02Sc and LDC_01_02Sc (P. Krstonosic): in progress

Summary

- New version of Mokka (06-03) will be available soon after this meeting, with several important improvements and the new detectors for the simulation of Desy and CERN test beam data using the new coordinate system
  - All info available on the Mokka WEB page:

    http://polywww.in2p3.fr:8081/MOKKA

- Bug fix + new features in MySQL wrapper

- Work on new detector models (LDC_00_02Sc, LDC_01_02Sc) and implementation of test magnet with TPC prototype is close to completion
  - Will be part of the new release