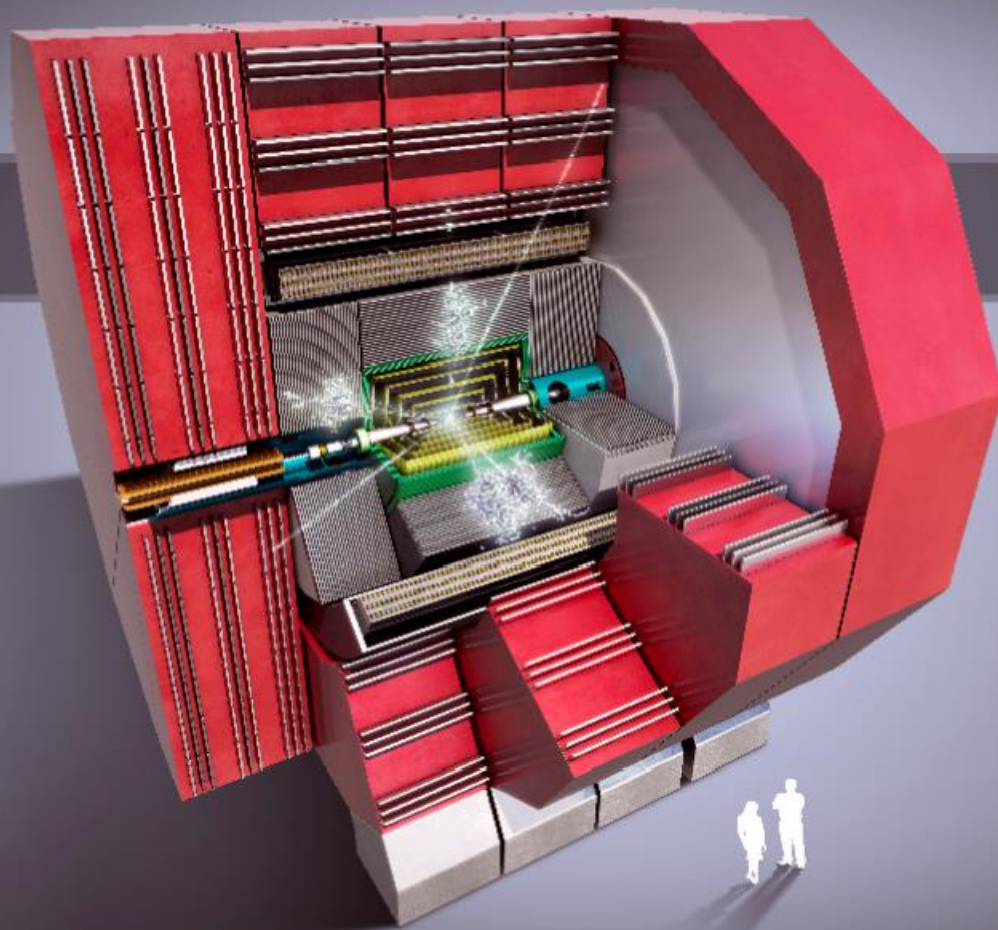# CLIC detector & physics study
-- Intro and general news --

Detector

- Detector model
- CLIC & Snowmass
- Organisation news
- Upcoming meetings
- Practical details

Spokesperson election =>
Thank you for your overwhelming support !!!

My door is open.
Please convey your suggestions

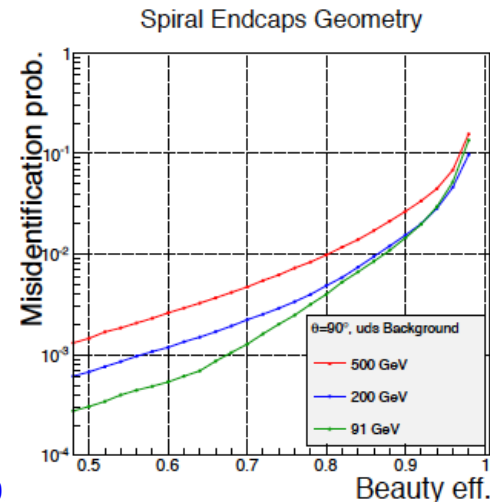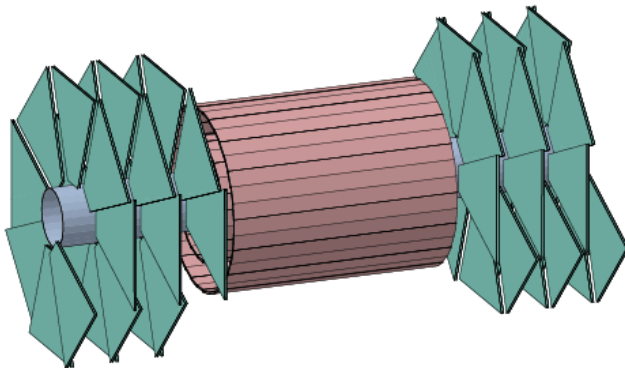# The CLIC detector model…..

CLIC detector model optimisation

The current CLIC_SiD and CLIC-ILD detector models were frozen end-2010.
With our current understanding, complemented with additional simulation studies, we plan to come to:

- **An optimised CLIC detector model by end 2014**
- Implemented in **DD4HEP geometry** software

In this context several studies are ongoing, and <u>more help is welcome</u> ★:

Vertex detector optimisation:

- Vertex detector geometry optimisation (#material, single/double layers, spiraling disks, etc.) => optimise for flavour tagging
- See Vertex WG http://indico.cern.ch/categoryDisplay.py?categId=2843

Spiral Endcaps Geometry

θ=90°, uds Background
— 500 GeV
— 200 GeV
— 91 GeV

Misidentification prob. vs Beauty eff.

CLIC detector model optimisation

(forward) tracking optimisation ★:

- Study of high-occupancy region
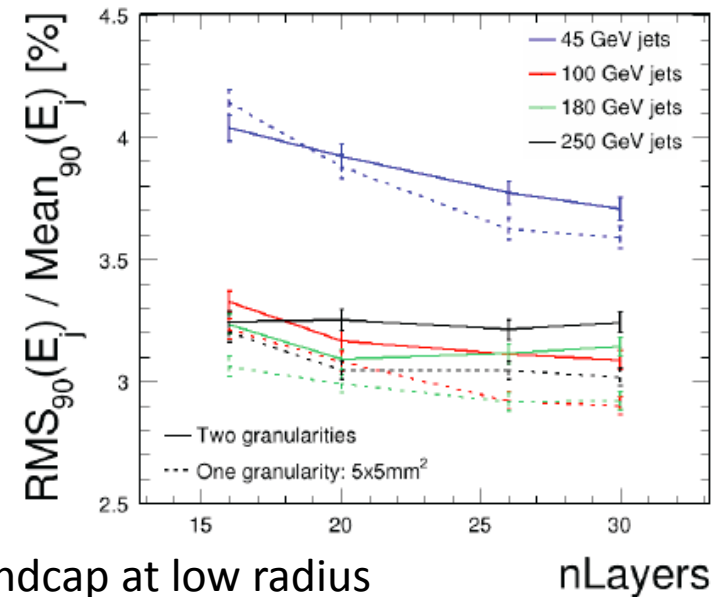- Overall tracker optimisation (e.g. radius, aspect ratio, design)

ECAL optimisation:

- Broad study of ECAL layout and PFA performance => Quite advanced
- Dedicated ILC/CLIC WG:
- http://indico.cern.ch/categoryDisplay.py?categId=4379

Forward region optimisation ★:

- Understand/tackle high occupancies in calorimeter endcap at low radius
- Understand penalties vs. benefits for QD0 inside/outside the detector

DD4hep geometry description software package ★:

- Development and implementation

CLICdp and the Snowmass process…….

CLICdp and Snowmass

CLICdp participated in:

- Two **Energy Frontier** meetings (at BNL and Seattle) => 7 CLICdp talks
- The **community meeting in Minneapolis**

CLICdp input to Snowmass:

Physics at the CLIC e+e- Linear Collider, Input to the Snowmass process 2013
http://arxiv.org/abs/1307.5288
Final update on arXiv (v3) was submitted yesterday

CLICdp is well represented in the summary papers of:

- The Higgs working group
- The top working group
- The electroweak working group

While it is a struggle to get represented in an objective way in the report of

- The BSM working group

Overall satisfied with our participation in the Snowmass process
=> Collected new ideas for future CLIC physics studies (listed in white paper)

Some news on the organisation…….
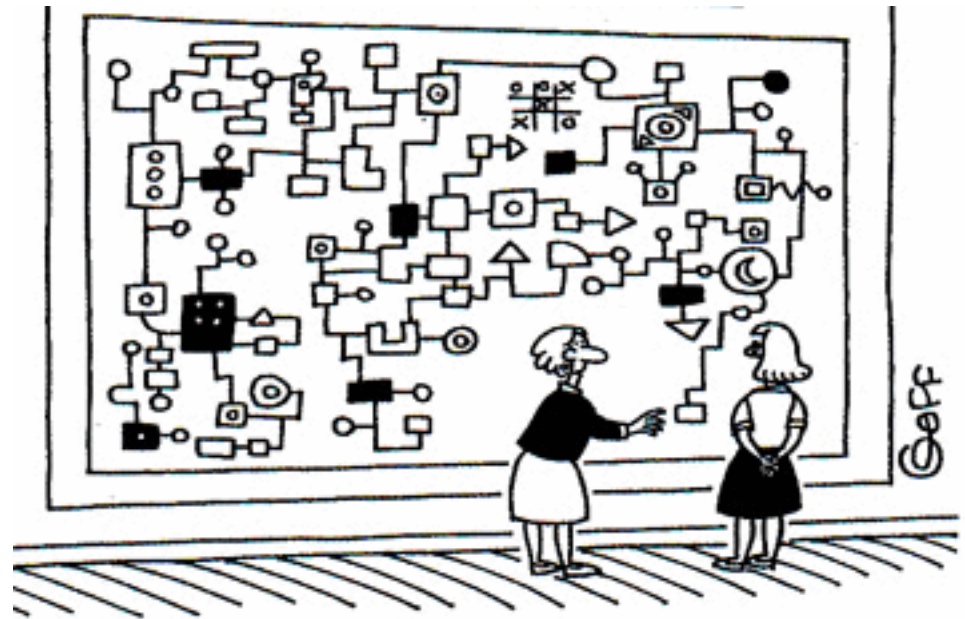
CLICdp organisation news

LAPP Annecy signed the MoC
$\Rightarrow$ **CLICdp now has 18 institutes**
http://lcd.web.cern.ch/LCD/Home/MoC.html

****

Next Institute Board meeting today
Will hopefully proceed to appoint (with approval of the IB):
- **Chair for the Publication Committee**
- **Chair of the Speakers Committee**

****

Then continue to **implement** further elements of the **organisational structure**, with corresponding **MoC Annex 3 text** and nominations.

CLICdp publications

CLICdp procedures for conferences and publications approved at IB on 11/6/2013
See presentation by Aharon Levy:
http://indico.cern.ch/conferenceDisplay.py?confId=260713=> Currently

The **CLICdp notes series are available in CDS since a few days**:

    CLIC-DP-Pub-yyyy-nnn (following internal review)
    CLIC-DP-Note-yyyy-nnn (following internal review)
    CLIC-DP-Conf-yyyy-nnn (following internal review)
    CLIC-DP-Int-yyyy-nnn (without review)

    CLIC-DP-Draft-yyyy-nnn <= only used for reviewing procedure

Submission of CLIC-DP-….. In CDS can start.
(As a result the LCD-Note-yyyy-nnn will be used much less)

PhD, Master thesis can be submitted through CERN-THESIS-yyyy-nnn
Use experiment identifier "CLICdp" in CDS

All submissions by: clicdp-pubcom@cern.ch
Reviewing procedure accessible to: clicdp-members@cern.ch
See backup slides for more details and links

Upcoming meetings …….

Upcoming meetings

FCAL workshop, DESY Zeuthen, October 7+8
https://indico.desy.de/conferenceDisplay.py?ovw=True&confId=8669

SiD workshop, SLAC, October 14-16
https://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=6161

LCWS13, Tokyo Univ., November 11-15
http://www.icepp.s.u-tokyo.ac.jp/lcws13/
        Plenary talk on CLICdp by Andre Sailer
        Information on CLICdp talks is being collected by:
            Philipp Roloff / Mark Thomson for physics analysis talks
            Michael Hauschild for all other talks

Next CLIC workshop, February 3-7 2014 at CERN
https://indico.cern.ch/internalPage.py?pageId=1&confId=275412
To be discussed at the IB meeting:
        limit the Detector&Physics part to (first) 3 days ?

Practical details for this meeting …….

Practicalities

- Meeting is spread over **many different meeting rooms !** Sorry

- **Coffee** served in building 40 for the following breaks:
    - Today, after the plenary session
    - Tomorrow, before the plenary session

- Possibility to **visit** CLIC two-beam module and CLIC showroom (incl. detector mock-up)
    - Organisation: Sophie Redford
    - Today, 18 hrs at building 2008

- Contribution to the dinner, 60 CHF, centrally collected

- **Dinner**: tonight, appointment at **Café de l'Aviation, 19:30 hrs**
    - Tram stop Blandonnet

- **Photograph**: tomorrow 10 min before plenary session (afternoon, bldg 40)

THANK YOU !

Submissions

- Draft submission for Pub, Note and Conf (by clicdp-pubcom@cern.ch):
    - CLIC-DP-Draft-yyyy-nnn: https://cds.cern.ch/submit?doctype=GENSBM
    - Drafts can be read and commented including comment file upload (by clicdp-members@cern.ch)
- Submission of approved Pub, Note and Conf (by clicdp-pubcom@cern.ch):
    - Manual creation of new records, comments stay in the draft
    - CLIC-DP-Pub-yyyy-nnn: https://cds.cern.ch/submit?doctype=GENSBM
    - CLIC-DP-Note-yyyy-nnn: https://cds.cern.ch/submit?doctype=GENSBM
    - CLIC-DP-Conf-yyyy-nnn: https://cds.cern.ch/submit?doctype=GENSBM
- Submission of thesis (by clicdp-pubcom@cern.ch, internal enforcement necessary as this submission can be used by all CERN accounts):
    - CERN-THESIS-yyyy-nnn: https://cds.cern.ch/submit?doctype=CTH
- Submission of Int (by clicdp-pubcom@cern.ch):
    - CLIC-DP-Int-yyyy-nnn: https://cds.cern.ch/submit?doctype=GENSBM

Collections

- Approved records will belong to:
  - CLIC-DP-Pub-yyyy-nnn: https://cds.cern.ch/collection/Preprints
  - CLIC-DP-Note-yyyy-nnn: https://cds.cern.ch/collection/CERN%20Internal%20Notes
    - Subcollection "CLIC Detector and Physics Study Notes" which contains Notes:
      - + Focus on "CLIC Detector and Physics Study Internal Notes" for Int, restricted to clicdp-members@cern.ch
  - CLIC-DP-Conf-yyyy-nnn: https://cds.cern.ch/collection/Preprints
  - CERN-THESIS-yyyy-nnn: https://cds.cern.ch/collection/Theses + CLIC-DP metadata
- "CLIC Detector and Physics Study" main collection that includes all approved CLIC-DP-* records and CLIC-DP-related theses
  - + Focus on "CLIC Detector and Physics Study Drafts" which contains drafts, restricted to clicdp-members@cern.ch
- https://cds.cern.ch/collection/CERN%20R%26D%20Projects as initial position (Q1 for final)

Ongoing activities: hardware R&D

Ongoing activities "with direct link to CLIC study":

- **Forward region calorimetry** => FCAL activities
    - Incl. effort on improved Bhabha scattering simulation

- **CLIC vertex detector R&D (+ inner tracking integration)**
    - Hybrid option activities ongoing: Electronics design, pulsed power, engineering aspects, tests, physics performance
    - Other technology option ?

- **Forward tracker**
    - Forward tracker design and hardware studies (linked to vertex studies)

- **ECAL/HCAL**
    - CALICE ECAL (including new ECAL optimisation studies)
    - CALICE HCAL
        - Ongoing analysis of tungsten HCAL beam tests (AHCAL+DHCAL)

- **General engineering studies**
    - Engineering, etc. Working Group

- **Coil R&D**
    - Design studies + reinforced conductor R&D
    - Dedicated meeting within engineering WG