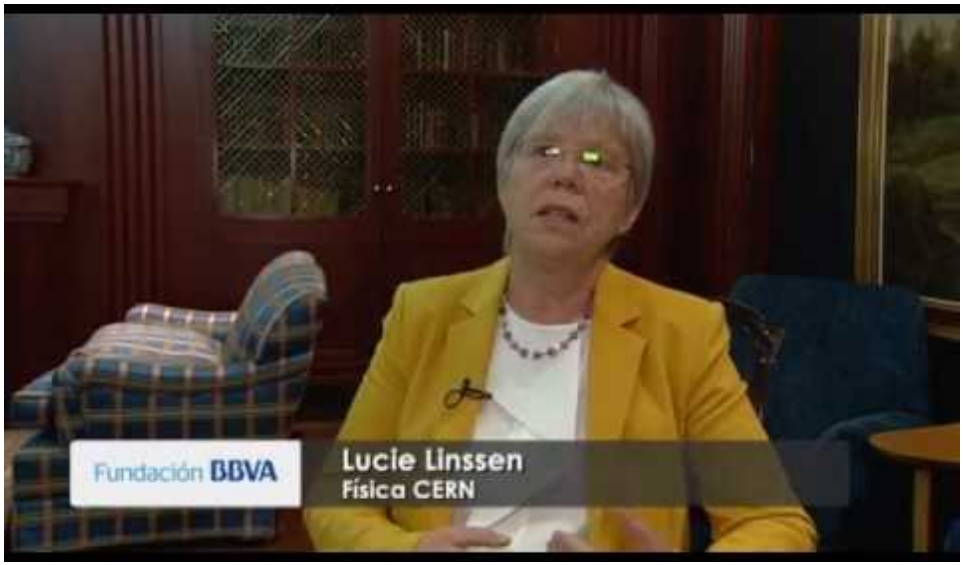
CLICdp Institute Board Report

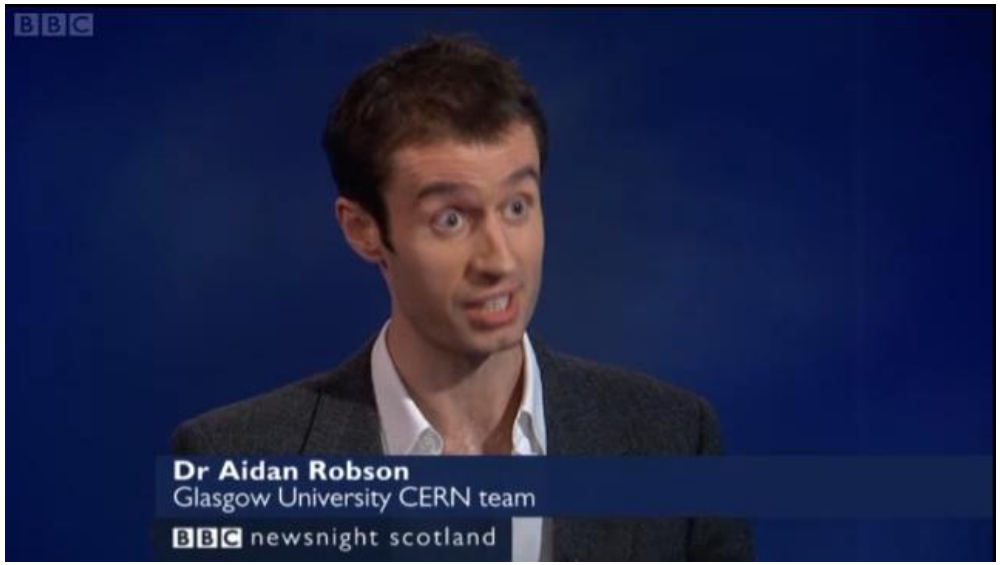
CLICdp Collaboration Meeting

25 January 2018

Victoria Martin

Spokesperson Handover





Aidan Robson took over from Lucie on 1st January 2018

Every thanks to Lucie!

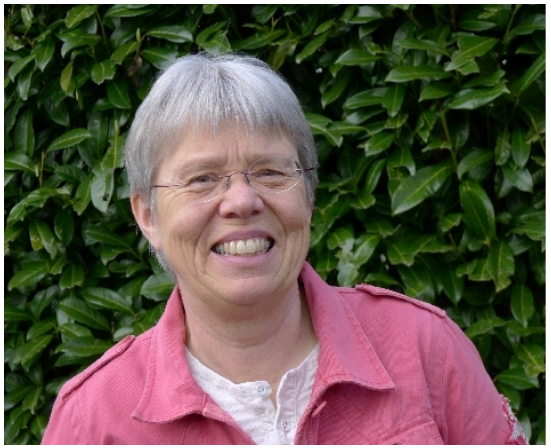
And now we are 30!

The University of Siegen joined CLICdp in December 2017.

Led by Wolfgang Kilian.

New CLICdp Technical Coordinator

Konrad has been technical coordinator the formation of the study, and asked to step down
Lucie approved by the IB as the new CLICdp technical coordinator

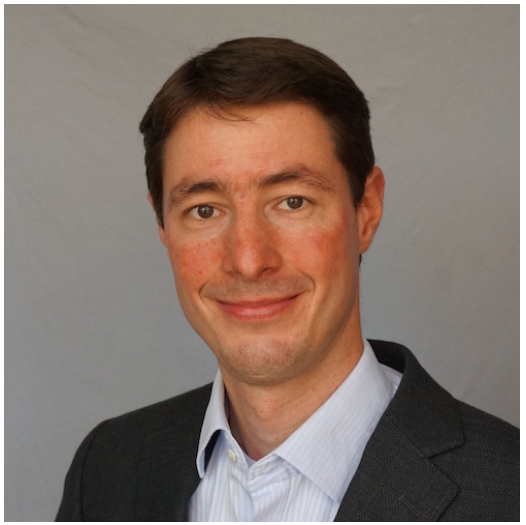


CLICdp Executive Team

The CLIC detector and physics Executive Team (ET)

– Comprises (i) the Spokesperson (*Aidan*), who shall also act as the ET Chairperson, (ii) the Technical Coordinator (*Lucie*), and (iii) any additional member appointed by the Spokesperson;

Philipp Roloff and **Frank Simon** join the Executive Team



ET members will attend future CLICdp IB meetings

Publications Committee

Rotation of membership on the publication committee

Filip Żarnecki (University of Warsaw) (chair)

Aharon Levy (Tel Aviv University)

Rickard Ström (CERN) → **Simon Spannagel (CERN)**

Nigel Watson (University of Birmingham)

Many thanks to Rickard!

European Strategy Update (ESU) planning

CLICdp documents in preparation for next European Strategy

CLICdp reports serving as ingredients for a CLIC summary report:

- Updated Baseline for a Staged Compact Linear Collider (380 GeV, 1.5 TeV, 3 TeV) ✔
  - arXiv:1608.07537, CERN-2016-004
- Higgs Physics at the CLIC Electron-Positron Linear Collider ✔
  - arXiv:1608.07538, Eur. Phys. J. C77 (2017) no.7, 475
- The new optimised CLIC detector model CLICdet ✔✔
  - CLICdp note CLICdp-Note-2017-001

  Detector description note done
  Detector performance note in progress
- An overview of CLIC top physics
  - CLIC top physics publication => complete draft ~~(before the end of 2017)~~
- Extended BSM studies (hopefully also motivated by LHC discoveries)
  - CLIC BSM overview publication in 2018
- CLIC R&D report => with main CLIC technology demonstrators
  - Summary publication(s) in 2018
- Plan for the period ~2019-2025 in case CLIC would be supported by next strategy

ESU Input: Top Physics at CLIC

Status report given by Philipp in earlier today.
Draft ready for Advisory Board (April)

Editorial Team:
Aidan Robson (University of Glasgow)
Philipp Roloff (CERN)
Frank Simon (MPI Munich)
Rickard Ström (CERN)
Andrea Wulzer (CERN)
Filip Żarnecki (University of Warsaw)

Contributor/reviewer:
Marcel Vos (Valencia)

PubComm Lead:
Nigel Watson (University of Birmingham)

Official Readers:
Igor Boyko (JINR)
Wolfgang Kilian (University of Siegen)

ESU Input: CLICdet Detector Performance

Huge progress recently
Detector and reconstruction frozen
Results from first full test samples shown at this workshop

CLICdp note structure in place; most plots ready
Aim to complete in ~few months

Contents

Editorial Team:

Andre Sailer (CERN) [lead]
Emilia Leogrande (CERN)
Matthias Weber (CERN)

with support from
Konrad Elsener (CERN)

ESU Input: CLIC Detector R&D

Intended as CERN Yellow Report
Proposed structure presented in last 'monthly' meeting

Editorial Team:
Dominik Dannheim (CERN) [lead]
Andreas Nürnberg (Karlsruhe)
Aharon Levy (Tel Aviv)
Katja Krüger (DESY)

Contents

ESU Input: BSM Physics at CLIC

Chapter 1: The SM EFT

- 1.1 -- EFT Framework
- 1.2 -- Low-Energy probes:
  implications of Higgs/top couplings measurement, with new analysis of 3-linear Higgs
- 1.3 -- High-Energy probes (**unique to CLIC**)
  Comprehensive Drell-Yan analysis (l+l-, qq, tt)
  WW (using also polarised beams)
  ZH
  WW>tt (summary, as it also appears in Top Report)
- 1.4 -- BSM impact
  General Top and Higgs compositeness interpretation
  Composite Higgs
  Top Partners
  3-linear Higgs (plus direct searches) on EW baryo-genesis?

Chapter 2: Direct Searches

- 2.1 -- Closing SUSY Holes:
  Summary of previous studies
  Compressed spectra
- 2.2 -- Dark Matter:
  Neutralino DM
  Minimal (milli-charged) DM
- 2.3 -- Fleebly-interacting particles
  Long-lived/displaced vertices
  ALPs? (Thamm with Neubert?)
- 2.4 -- Extra Scalars
  Extra Singlet
  Twin-Higgs-motivated signatures? (Verharen?)
- 2.5 New Neutrinos and see-saw
  - Gauge-Charged see-saw mediators
  - Singlet see-saw mediators

Chapter 3: Flavour Physics

- 3.1 -- FCNC:
  probe FCNC operators directly, by high energy q q' (including top, maybe also mu-tau, e-tau) production.
  Exotic top decays and interplay with the above
- 3.2 -- BSM impact of Light quark Yukawa determinations.
- 3.3 -- LFUV anomaly (?) If we can say something non-trivial, and without putting too much emphasis, we can take it as an opportunity to assess CLIC sensitivity to some exotic flavour model.

Intended as CERN Yellow Report
Combination of theory contributions arising from Physics Potential WG, and full simulation studies (including summary of earlier studies to be comprehensive)
Editorial kickoff meeting in February

Editorial Team:

TH:
Jorge De Blas (INFN-Padova),
Roberto Franceschini (Rome)
Francesco Riva (EPFL)
Michael Spannowsky (Durham)
James Wells (Michigan)
Andrea Wulzer (CERN)
Jure Zupan (Cincinatti)

EXP: Philipp Roloff (CERN)
Ulrike Schnoor (CERN)

ESU Input: Joint report with accelerator

Intended to resemble CDR volume 3.
First thoughts on content (to be refined):

From the accelerator:

Accelerator technology: 380GeV drive beam and klystron options; 1.5 & 3TeV

Possible section on higher-energy (with novel technology)

Performance summary from CTF3

Implementation:
schedule, cost, power

From detector & physics:

Physics case summary: Higgs, top, BSM

Detector concept and performance

Cost estimates

From both: Plan for 2019–25

Editorial Team:

CLIC Accelerator:
Steinar Stapnes (CERN)
Phil Burrows (Oxford)
Daniel Schulte (CERN)
+ other?

CLICdp:
Lucie Linssen (CERN)
Aidan Robson (Glasgow)
Eva Sicking (CERN)

This will come later, relying on the other reports as input.
Main effort likely to be in summer.

CLICdp Advisory Board

Advisory Board meeting 17–18 April at CERN

Name	Institute
Dave Charlton (chair)	Univ. Birmingham
Juan ALCARAZ MAESTRE	CIEMAT, Madrid
Freya BLEKMAN	Vrije Univ. Brussels
Keisuke FUJII	KEK
Christophe GROJEAN	DESY
Matthew McCullough	CERN
Sven MENKE	MPI Munich
Roger RUSACK	Univ. Minnesota, Minneapolis
Peter SCHLEPER	Univ. Hamburg
Joao VARELA	LIP and Univ. Lisbon
Vincenzo VAGNONI	Bologna Univ. and INFN
Pippa WELLS	CERN

Aim: 'sounding board' for CLIC ESU preparation

Give feedback and recommendations on ongoing activities and ESU presentation

Focus on CLIC detector & physics (but will inform on status of CLIC accelerator)

Stronger focus on the physics than on the detectors/technology

Agenda and list of documents to give to advisory board are in draft

Upcoming CLIC / LC events

CALICE collaboration meeting, Mainz, 7–9 March 2018
https://agenda.linearcollider.org/event/7798/

FCAL collaboration meeting, IFJ PAN Cracow, 10–11 May 2018
https://indico.cern.ch/event/697164/

Asian Linear Collider Workshop, Fukuoka, Japan
28 May – 1 June 2018
https://agenda.linearcollider.org/event/7826/

Workshop on Top physics at the LC 2018, Tohoku University, 4-6 June 2018
https://agenda.linearcollider.org/event/7820/

CLICdp meeting late August 2018 (location & dates will be confirmed soon)

Technical Coordinator Role

The Technical Coordinator …

– coordinates engineering and layout issues in the study, and provides the interface to the accelerator working groups (“Machine Detector Interface”) as well as the interface to CERN for matters related to general infrastructures;

– Has the role and the responsibility of the GLIMOS

– Assists the Spokesperson in matters of technical design and general organisation of the study