



# Spokesperson Report

CLICdp Institute Board, 28 August 2018

Aidan Robson, University of Glasgow & CERN



## Collaboration organisation issues

- Physics Analysis WG convenor
- Publications Committee chair and membership
- Speakers Committee membership
- IB membership

## Updated luminosity staging baseline

## Advisory Board report

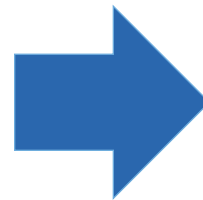
## European Strategy preparation

- Authorship and review plans
- National meetings update

## Announcements / reminders

- Warsaw job opening
- Forthcoming meetings

- Victoria Martin (Edinburgh) has been co-convener of Physics Analysis WG since October 2016
- As with all collaboration roles, a certain degree of rotation is desirable
- ***Many thanks to Victoria!***  
 → propose to replace Victoria by Filip Żarnecki (Warsaw) (joining Philipp Roloff)



Request to IB for endorsement

- As Filip is moving to Physics Analysis WG co-convener and he currently chairs PubComm, new member & chair required
- ***Many thanks to Filip!***
  - propose to replace Filip as chair by Nigel Watson (Birmingham) (existing committee member)
  - propose to replace Filip as member by Ulrike Schnoor (CERN)



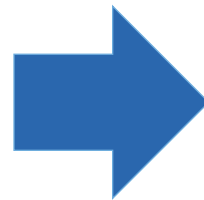
**Member: Request to  
IB for endorsement**



**Chair: Request to  
IB for approval**

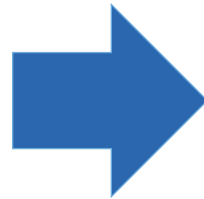
- Other members: Aharon Levy (Tel Aviv), Simon Spannagel (CERN)

- Igor Boyko (JINR) has been member of the Speakers Committee since spring 2017
- As with all collaboration roles, a certain degree of rotation is desirable
- ***Many thanks to Igor!***  
 → propose to replace Igor by Emilia Leogrande (CERN)  
 (joining Naomi van der Kolk (Nikhef) and Eva Sicking (CERN) )



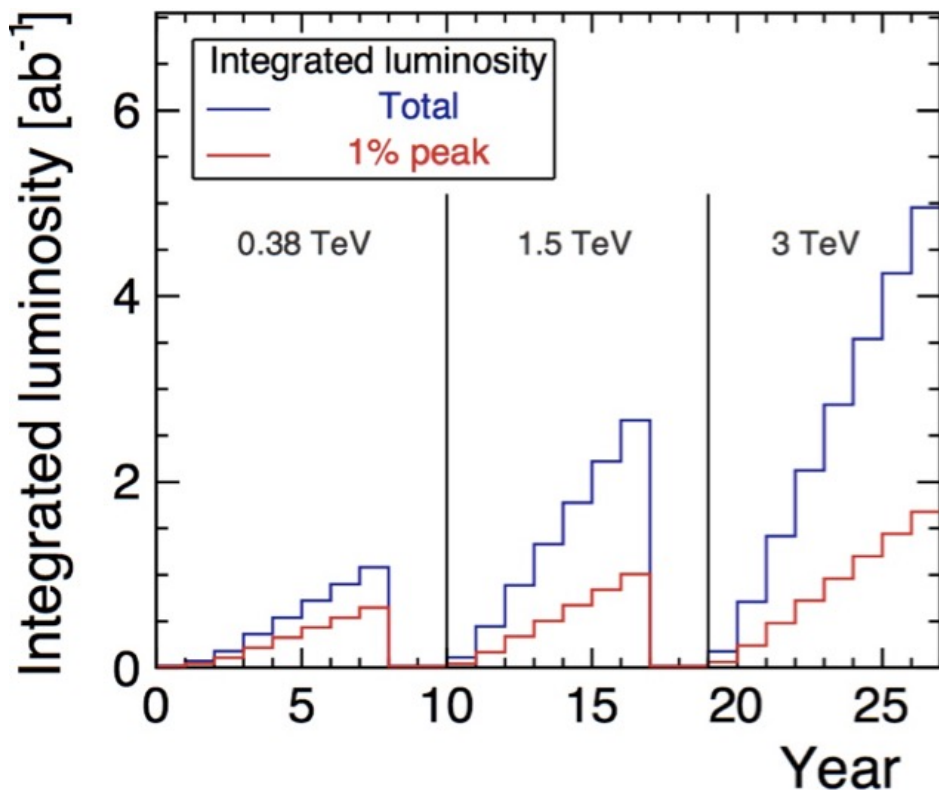
**Request to IB for endorsement**

- When Mark Thomson became head of the UK's research council STFC, John Marshall took over as Cambridge's IB representative
- John has just taken up a permanent position at Warwick  
*Congratulations to John!*
- → John will be replaced by Steve Green



- Both keen to maintain links with CLICdp and support our use of Pandora to the extent possible given their other commitments

- For recording in the minutes:



$1 \text{ ab}^{-1}$  at 380 GeV  
 (incl. ttbar threshold scan)  
 +  $2.5 \text{ ab}^{-1}$  at 1.5 TeV  
 +  $5 \text{ ab}^{-1}$  at 3 TeV

Splitting of beam polarisation configurations to maximise the overall physics potential:

- 380 GeV: equal luminosity with +80% and -80%
- 1.5 and 3 TeV: 80% of the luminosity with -80% polarisation



# Advisory Board report



- Please note that the Advisory Board report is not for public circulation. We do however propose to send it to the CERN management.
- Continue discussion on Advisory Board report from morning session:
  - Physics case
  - Overall detector design
  - Vertex and tracker design and technologies
  - Calorimeter design and technologies
  - DAQ and detector readout
  - CLIC operating strategies





# Report preparation



- Top-Quark Physics at the CLIC Electron–Positron Linear Collider  
→ submitted to JHEP in July
- The Compact  $e^+e^-$  Linear Collider (CLIC) – 2018 summary report  
[Yellow Report]
- The CLIC Physics Potential  
[Yellow Report]
- Detector Technologies for CLIC  
[Yellow Report]
- A detector for CLIC: main parameters and performance



# CLIC Summary Report



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Total number of pages ~63

- Along the lines of CDR vol 3 / updated baseline yellow report
- Joint with accelerator collaboration
- Intended as Yellow Report
- Schedule: assemble in Sept/Oct, but relies on final results/plots from other reports
- Deadline for submission to CREB: 1<sup>st</sup> December [for all yellow reports]

## Summary Report Editorial Team:

- Lucie Linssen [lead]
- Phil Burrows
- Aidan Robson
- Daniel Schulte
- Eva Sicking
- Steinar Stapnes



# Detector Technologies for CLIC ['R&D Report']



- Covering vertex and tracker R&D, summaries of CALICE & FCAL work, and DAQ.
- Intended as Yellow Report
- Schedule: aim to submit to PubCom mid-Oct
- Deadline for submission to CREB: 1<sup>st</sup> December [for all yellow reports]

*R&D Editorial Team:*

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

## Contents

### 1. Introduction

### 2. CLIC detector overview and experimental conditions (5 p.)

- 2.1. Detector layout
- 2.2. Beam-induced backgrounds

### 3. Vertex and tracking detector (40 p.)

- 3.1. Requirements
- 3.2. Detector concept
- 3.3. Hybrid passive sensors and r/o ASICs
  - 3.3.1. Readout ASICs and backend processing (TSV)
  - 3.3.2. Active-edge sensor technology
  - 3.3.3. Sensors with enhanced lateral drift (ELAD)
  - 3.3.4. Fine-pitch bump bonding
- 3.4. CMOS sensors
  - 3.4.1. Capacitively coupled active High-Voltage CMOS sensors
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  - 3.4.3. Monolithic High-Resistivity CMOS sensors
  - 3.4.4. Monolithic SOI sensors
- 3.5. Cooling
- 3.6. Mechanical integration
- 3.7. Summary and outlook

### 4. Calorimeters (10 p.)

- 4.1. Electromagnetic calorimeter
- 4.2. Hadronic calorimeter
- 4.3. Summary and outlook

CALICE

### 5. Very forward calorimeters (10 p.)

- 5.1. Luminosity calorimeter (LumiCal)
- 5.2. Beam calorimeter (BeamCal)
- 5.3. Summary and outlook

FCAL

### 6. Readout electronics and data acquisition system (10 p.)

- 6.1. Detector readout requirements
- 6.2. Subdetector implementation schemes
- 6.3. Power delivery and power pulsing
  - 6.3.1. Implementation example: vertex detector
  - 6.3.2. Implementation example: calorimeters
- 6.4. Summary and Outlook

### 7. Conclusions and future developments

#### A. Caribou scalable readout system

#### B. Beam telescope infrastructure

#### C. Simulation tools



# The CLIC Physics Potential ['BSM Report']



- Combination of theory contributions arising from Physics Potential WG, and full simulation studies (including summary of earlier studies to be comprehensive).
- 3 main chapters:
  - Standard Model Effective Field Theory
  - Direct Searches
  - Flavour Physics
- > 50 studies contributing
- Deadline for individual contribution drafts is past
- Chapter editors to deliver ~complete drafts by end August
- Overall editing happening during September

## *BSM 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 (Cincinnati)

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



# Detector Performance/Validation Note



- Complete version of the CLICdet detector performance & validation note was available for the Advisory Board review
- Already went through a round of review in CDS
- Aim for completion 1<sup>st</sup> Nov and review thereafter
- Final completion: 1<sup>st</sup> Dec

## *Editorial Team:*

Andre Sailer (CERN) [lead]  
 Emilia Leogrande (CERN)  
 Matthias Weber (CERN)  
 with support from  
 Konrad Elsener (CERN)



Prepared for the CLIC Detector & Physics Advisory Board Review  
 April 17-18, 2018

## **A detector for CLIC: main parameters and performance**

D. Arominski<sup>\*‡</sup>, Author list is under construction<sup>§</sup>,  
 E. Leogrande<sup>1)\*</sup>, A. Sailer<sup>1)\*</sup>, M.A. Weber<sup>1)\*</sup>

On behalf of the CLICdp Collaboration

<sup>\*</sup> CERN, Switzerland, <sup>‡</sup> Warsaw University of Technology, Poland, <sup>§</sup> Other University, Country

### **Abstract**

Together with the recent CLIC detector model CLICdet a new software suite was introduced for the simulation and reconstruction of events in this detector. This note gives a brief introduction to CLICdet and describes the CLIC experimental conditions at 380 GeV and 3 TeV, including beam-induced backgrounds. The simulation and reconstruction tools are introduced, and the physics performance obtained is described in terms of single particles, particles in jets, jet energy resolution and flavour tagging. The performance of the very forward electromagnetic calorimeters is also discussed.



# Authorship and review planning



- CLIC Summary Report:  
Author list: Complete CLICdp + CLIC accelerator  
IB members will be contacted to provide authors  
'Normal' CLICdp review process
- Detector Technologies Report:  
Author list: those who provided input to the studies  
IB members will be contacted to provide authors  
'Normal' CLICdp review process
- Physics Potential Report:  
Author list: those who provided input to the studies  
(opportunity to check during review)  
Very many theorists involved (not members of CLICdp)  
Editors should already be in contact with individual contributors regarding  
editing of their sections  
Report will be circulated to authors and entire CLICdp for comment
- Detector performance/validation note:  
Author list: those who provided input to the studies  
(opportunity to check during review)  
'Normal' CLICdp review process (one round already)

**For IB discussion**



# ESU National Meetings



- At CLIC January workshop I asked to be kept informed of national meetings preparing for ESU, so that we could consider how/when to provide CLIC input.
  - So far, aware of three that have taken place where CLICdp has been able to provide input to speakers or to give talks:
  - DE: Community strategy workshop on particle physics, Bonn 3–4 May
    - culmination of several years of preparatory workshops
    - strategy is very favourable to  $e+e-$
    - <http://www.ketweb.de/e199632/e199635/e268373/e296589/Abschlusserklaerung.pdf>
    - ESU input will be drafted later
  - CH: CHIPP Strategic Workshop, Roadmap Planning, 3–5 April
    - follow-up meeting ~September
  - UK: ‘Mid-career’ strategy discussion meeting, Durham 16–18 April
    - Community-wide meeting, RAL 16–17 July
    - Follow-on meeting, Birmingham 20–21 September
- please continue to let us know about such meetings
- please take opportunities to give local seminars on CLIC to raise awareness



# Announcements / Reminders





# CLICdp job opening at Warsaw



- Reminder: University of Warsaw has an open fixed-term (2-year) research Assistant Professor position
- To work on CLICdp, particularly in top/BSM physics analysis
- Open to those whose PhD was awarded in 2011 or later
- Deadline is extended to 15<sup>th</sup> September
- → encourage interest ; contact Filip Żarnecki



# Forthcoming meetings



- CLIC Workshop 2019:  
21–25 January 2019 at CERN
- LC Strategy Meeting  
Expected late March / early April
- ESU Community Meeting  
13–16 May 2019, Granada