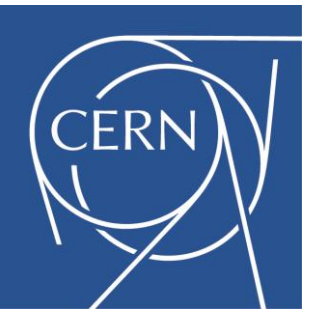


# LC programme 2020-25 - main elements



Core enabling “technologies” for CLIC and technology applications:

- X-band from fundamentals to structures, ultimately on modules including all X-band components
- X-band RF power and test-stands as needed for these studies
- Nanobeams/luminosity with all it implies – beam-dynamics, BDS, ATF, instrumentation, stabilization, alignment, also positron production
- Drive-beam including HiEff klystrons
- Simulation and modeling (start to end) – for CLIC and applications
- Modules design and implementation studies
- For applications: Injector(s)

LC studies as it is today is implemented in CERN medium term plan (MTP) 2021-25 - as three studies/projects:

- LC (CLIC and ILC)
- CLEAR (LC are users)
- HiEff klystrons (LC are clients)

Facilities: CLEAR, ATF2(3), FACET, X-band users and installations around the world

External resources:

Collaboration contributions, based on MoU/ICA addenda or contracts (~50 institutes)

CompactLight, ARIES TNA, I-FAST, FLASH RT

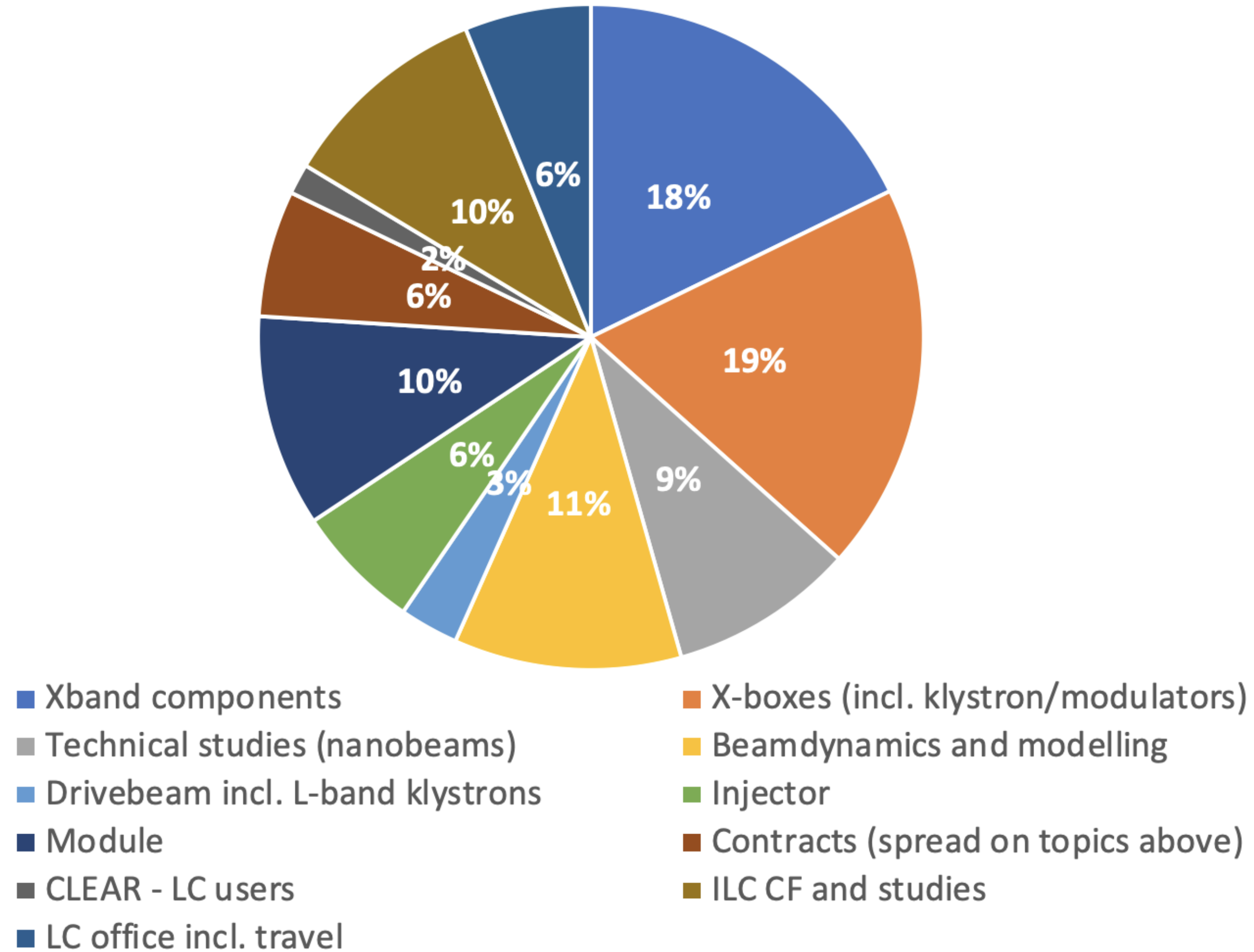
Additionally:

Organize CERN's ILC efforts and provide help with/facilitate European coordination.

Several of the technological points above are equally applicable to ILC.



# Material budget breakdown





# Very High Energy Electron Radiotherapy Workshop (VHEE'2020) 5 Oct - 7 Oct, and CompactLight Annual Meeting 20-25 November



**Very High Energy Electron Radiotherapy Workshop (VHEE'2020)**

5-7 October 2020  
CERN  
Europe/Zurich timezone

- Overview
- Timetable
- Contribution List
- Registration
- Scientific Advisory Committee
- Local Organising Committee
- VHEE 2017
- CLIC Project Office
- ✉ clic.project.office...



**VHEE2020**

Establishing innovative treatment modalities for cancer is a major 21st century health challenge. Although accelerated electrons are widely used to generate X-rays for radiotherapy, electrons are less frequently used directly because low energy electrons have limited penetration range and are mostly for the treatment of superficial tumours and thus limiting their clinical applicability.

Recently, studies involving **ultra-high dose rate** (mean dose rate above 100 Gy/s) delivery of ionizing radiation, termed **FLASH radiotherapy (FLASH-RT)**, have uncovered some unexpected but possible therapeutic benefits caused tremendous excitement in the radiology field. Data appear to show that FLASH-RT affords significant normal tissue sparing without compromising tumour control.

In addition, the idea of investigating the use of **very high-energy** (50-250 MeV) **electron (VHEE)** beams for RT has gained interest, since electrons with higher energies can travel deeper into the patient. The advantages of this very high-energy electron therapy (VHEE) are that the depth - dose profile from the electrons is flatter than the quasi-exponential dose given by X-rays, and in addition - in principle - the delivered electrons (which are charged) may be focused and steered in ways that are not possible for X-rays. The challenge until recently has been the difficulty in obtaining high-energy electrons using compact machines. This can now be overcome either with high-gradient cavities or by using laser-based acceleration.

Therefore, it is highly timely to have a follow up meeting to VHEE 2017  
<https://www.cockcroft.ac.uk/events/VHEE17/>

The list of topics to be explored are:

- State of the Art;
- Mechanism and Innovation for FLASH RT;
- New indications and hot topics;
- Facilities description: current and planned, e.g. exploitation and use of the existing facilities CLEAR, CLARA, ELBE, PITZ;
- Demonstrate capability of conventional RF acceleration techniques including SC for VHEE RT applications;
- Overall VHEE compact machine design including costing;
- Dosimetry and Detectors;
- Treatment Planning, Modelling and Imaging;
- Accelerators R&D and Technologies for medical treatment, e.g. novel acceleration techniques;
- Industrial panel for medical technologies and plans;
- Where are we going? Which experiments/facilities are needed?

The sessions will be fully remote. The video details will be communicated one week before the meeting.

**Third CompactLight Annual Meeting ("2nd Glasgow Virtual")**

20-25 November 2020  
Europe/Zurich timezone

- Overview
- Timetable
- Contribution List
- Registration
- Participant List
- Videoconference room

We are pleased to announce the **Third CompactLight Annual Meeting**, held virtually in Glasgow, via Zoom in reality.

The CompactLight project gathers world-leading experts united to achieve two objectives: disseminate X-band technology as a new standard for accelerator-based facilities, and advance undulators to the next generation of compact photon sources. The goal of CompactLight is to facilitate the widespread development of X-ray FEL facilities across and beyond Europe by making them more affordable to build and operate.

**Videoconference room:** the link to the Zoom videoconference room will appear in the left-hand side menu only after registration.

This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement No 777431.

For any questions, email [compactlight@elettra.eu](mailto:compactlight@elettra.eu).

🕒 Starts 20 Nov 2020, 14:30  
🕒 Ends 25 Nov 2020, 17:30  
Europe/Zurich

📎 Group photo 1.jpg  
📎 Group photo 2.jpg

📄 **Registration**  
You are registered for this event.

👤 70 [See details >](#)

<https://indico.cern.ch/event/939012/>



# “Nanobeam technologies” workshop 1-3<sup>rd</sup> February 2021

<https://indico.cern.ch/event/980103/timetable/#all.detailed>

From Nuria:

“We will organise a workshop about all the different technologies developed for creating, handling, and preserving nanobeams and ultra-short bunches. Primarily revolving around hardware, it should be an open forum for sharing ideas, experimental results, current limitations, and new applications of the technology that will enable smaller and smaller beams. We invite scientists working on High energy colliders, new generation light sources and accelerators in general to join us during three half-day sessions full of valuable discussions.

This meeting will take place exclusively on Zoom. Please, register to get the updated information”

**NanoBeams Workshop**

1-3 February 2021  
Europe/Zurich timezone

Search...

Overview  
Timetable  
Contribution List  
Participant List

**Timetable**

Mon 01/02 Tue 02/02 Wed 03/02 All days

Print PDF Full screen Detailed view Filter

Session legend

Mon 1/2

13:00	Welcome and introduction	Steinar Stapnes
	Beam dynamics tolerances for FELs and Linear	Andrea Latina
	Beam dynamics tolerances for Rings.	Yannis Papaphilippou
14:00	Jitter control and Feedback (IP, DB)	Philip Nicholas Burrows
	Wake-field monitors and wakefield mitigation	
15:00	Break	
	Permanent adjustable Magnets	
	High-field longitudinal gradient dipoles.	Manuel Dominguez
16:00	High-field undulators/wigglers HTS	Daniel Schoerfling
	Special magnets (ATF octupoles, skew sextupoles)	Michele Modena
	SC Low-beta magnets	
17:00		



Tue 2/2

09:00	RF design for High-frequency systems for rings (including low level and SPC)	
	Injection systems and methods	
	Power systems for low emittance rings	Erk Jensen
10:00	Crab cavities	
	Kicker design with tight kick tolerances and Pulsers with ultra-fast rise-time	
	Break	
11:00	Overview on profile measurements of nano-beams	Thibaut Lefevre
	High resolution cavity BPMS. From prototype to larger production	
	Measuring nanometer beam size at final focus	
12:00	Non-invasive beam measurement using polarisation radiation	Davel Karataev
	X-band transverse deflection structure with variable polarisation	Barbara Marchetti
	Measuring femtosecond bunches using Electro-optical techniques	
13:00		

Wed 3/2

13:00	The PACMAN project results	Helene Mainaud Durand
	Combining micron level absolute with nm level displacement	
	Structured laser beam for alignment	Jean-Christophe Gayde
14:00	Status MDI alignment	Leonard Watrelot
	Development of low-cost alignment systems	Mateusz Sosin
	Girder stability LAPP	Gael Balk
15:00	Break	
	Coating or generally surface treatment, e.g. laser.	
	Development of thin-walled copper electroformed vacuum chambers for undulators	
16:00	Measuring conductivity of coated surfaces at high frequency	Andrea Pasquarelli
	Vacuum and Interception devices (X-ray and beam, IP)	
	Beam dynamics tolerances for next generation of accelerators	
17:00	Workshop wrap-up	Nuria Catalan Lasheras



# MeVArc March 8-12 March 2021

<https://indico.cern.ch/event/966437/>

8-12 March 2021  
Online  
UTC timezone

Search...

### Overview

LATEST NEWS!

Topics

Timetable

Registration

Participant List

### MeVArc 2021 contact

- ✉ [andreas.kyrtsak...](#)
- ✉ [flyura.djurabeko...](#)
- ✉ [marek.jacewicz...](#)
- ✉ [anton.saessalo...](#)

### Overview

Vacuum arcs are a concern in nearly every vacuum device under electric field; consequently they are present in a very wide range of applications. Sometimes vacuum arcs form the basis for device operation, but all too often they are the primary failure mode.

Understanding the physical processes of a vacuum arc requires expertise from many disciplines – material science, surface physics, and plasma physics. Applications include high-voltage electronics, RF accelerators, electrostatic accelerators and vacuum interrupters. The purpose of this workshop series is to bring together scientists and engineers from many different disciplines and application areas to discuss the latest efforts in understanding vacuum arcs. We cover theory, simulation and experiments.

This year, due to the COVID-19 pandemic, the workshop will be held remotely. The workshop will last 5 days, with a 3-4h session each day, in order to cover all time zones. There will be no participation fee.



🕒 Starts 8 Mar 2021, 00:00  
Ends 12 Mar 2021, 23:59  
UTC

📍 Online

- 👤 [Flyura Djurabekova](#)
- [Andreas Kyrtsakis](#)
- [Marek Jacewicz](#)
- [Anton Saessalo](#)
- [Walter Wuensch](#)
- [Alexia Augier](#)

### 📄 Login

In order to register for the conference, you have to log in to the CERN Indico system by clicking on "Registration" or "Submit abstract" on the left side menu. You will then be directed to the login page. There are four options to log in:

- If you have already a **CERN account**, you can use it.
- If your home organization participates in the **eduGAIN** network (there are already 400+ universities and institutions who do), you can sign in with your organization or institution account, after you selected your organization in the eduGAIN dialog box.
- If you have a public service account such as **Facebook, Google, Windows Live or Yahoo**, you can use that account to log in.
- If none of the above works (and only then), you can create a **Lightweight CERN account** on the [CERN Account Management](#) page. Be sure to remember the username and password, since you will need that account to submit any abstract, slides or proceedings.

If you somehow have trouble to create a CERN lightweight account or using your public service account for Indico access, please restart your browser. If that does not help, try to delete cookies, then empty the browser cache.

📄 **Registration**  
Registration for this event is currently open.

[Register now >](#)

📄 **The call for abstracts is open**  
You can submit an abstract for reviewing.

[Submit new abstract](#)



# LCWS 15-19<sup>th</sup> March 2021



LCWS: The best dates are 15-19.3 2021

All remote

LOC European (Aidan Robson, Jenny List, Benno List, Maxim Titov, Philipp Roloff, Marcel Vos, Steinar, Alexia and Grace). We can add more if needed but this is a good start.

We also need to set up an International Advisory Committee (IAC) and discuss scheduling of sessions (to find decent overlapping times across the world).

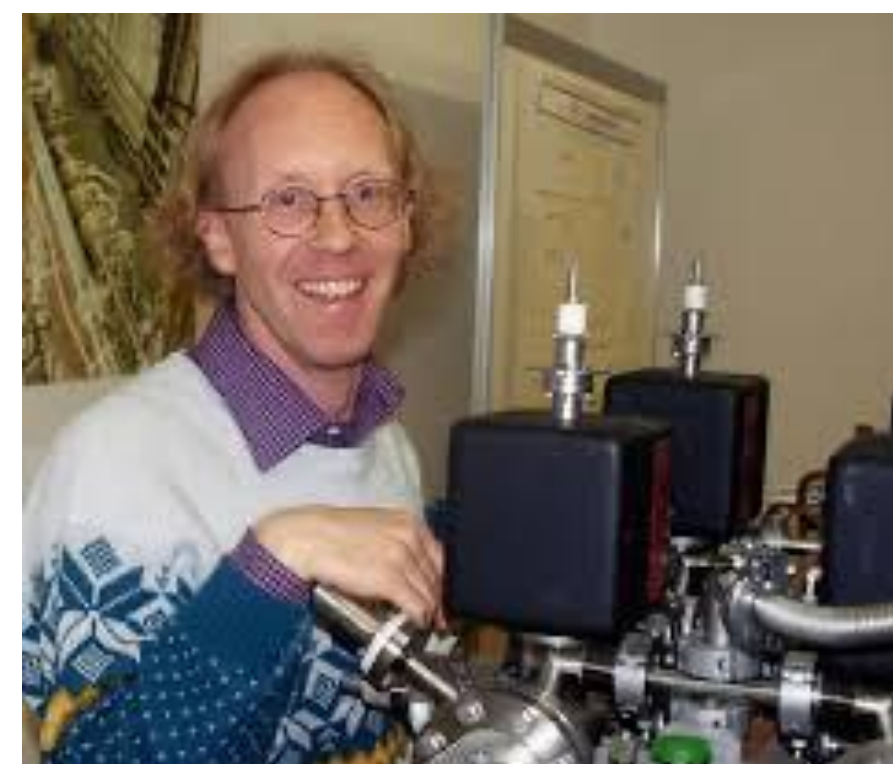


# Spokesperson and CB chair



It was decided in the CB meeting in October to initiate the elections of Spokesperson and CB chair – based on the programme shown initially - for the next 3 year period 2021-23 ....

**Many many thanks to Phil and Roger** for a tremendous effort and great work for the CLIC study during “PiP period”, the ESPP preparation, submissions and presentations, and the transition into next phase.





# ”Follow the CLIC notes”



- 2020-11-18  
11:18 **The Compact Linear Collider (CLIC) Snowmass 2021 LoI** / [Robson, Aidan](#) (University of Glasgow (GB)) ; [Burrows, Philip Nicholas](#) (University of Oxford (GB)) ; [Schulte, Daniel](#) (CERN) ; [Stapnes, Steinar](#) (CERN)  
The Compact Linear Collider (CLIC) is a multi-TeV high-luminosity linear e+e- collider under development by the CLIC accelerator collaboration. [...]  
[CERN-ACC-2020-0033](#) ; [CLIC-Note-1168](#). - 2020. - 4 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-11-17  
15:54 **Beam Dynamics Challenges for High-Energy Linear Colliders** / [Adli, Erik](#) (University of Oslo (NO)) ; [Burrows, Philip Nicholas](#) (University of Oxford (GB)) ; [Schulte, Daniel](#) (CERN) ; [Stapnes, Steinar](#) (CERN)  
CLIC can in principle be extended to higher energies than the currently foreseen 3 TeV final stage. [...]  
[CERN-ACC-2020-0032](#) ; [CLIC-Note-1167](#). - 2020. - 4 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-10-28  
14:30 **The design update of the X-band RF pulse compressor with Correction Cavities for the CLIC 380 GeV klystron based accelerator** / [Cai, Jinchu](#) (Lancaster University (GB)) ; [Syratchev, Igor](#) (CERN)  
The X-band RF Pulse Compressor (PC) with Correction Cavities was selected as a base line option for the CLIC 380 GeV klystron based accelerator. [...]  
[CERN-ACC-2020-0031](#) ; [CLIC-Note-1166](#). - 2020. - 6 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-29  
09:14 **Optimisation of the CLIC positron source at the 1.5 TeV and 3 TeV stages** / [Zhao, Yongke](#) (CERN, Shandong University (CN)) ; [Latina, Andrea](#) (CERN) ; [Doebert, Steffen](#) (CERN) ; [Schulte, Daniel](#) (CERN) ; [Ma, Lianliang](#) (Shandong University (CN))  
Positron source is very important for many accelerator experiments. [...]  
[CERN-ACC-2020-0026](#) ; [CLIC-Note-1165](#). - 2020. - 29 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-23  
18:00 **Cooling and Ventilation Studies for the CLIC** / [Cabral, Pedro](#) (CERN (CH), Instituto Superior Tecnico (PT)) ; [Nonis, Mauro](#) (CERN)  
The CLIC is composed of a large-scale complex requiring cooling and ventilation infrastructures in surface buildings and in underground tunnels [...]  
[CERN-ACC-2020-0025](#) ; [CLIC-Note-1164](#). - 2019. - 43 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-17  
12:40 **Thermal and Modal Simulations for the CLIC Module** / [Berg, Henri](#) (Helsinki Institute of Physics (FI))  
This article examines the modal frequencies and thermal deformations with different cooling schemes in unloaded condition of the latest girder and super accelerator structure (SAS) design of the CLIC module. [...]  
[CERN-ACC-2020-0024](#) ; [CLIC-Note-1163](#). - 2020. - 14 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-17  
12:07 **Performance of the Optimized Mechanical Design of the CLIC Main-Beam Quadrupole Magnet Prototype** / [Modena, Michele](#) (CERN) ; [Petroni, Carlo](#) (CERN)  
The Main-Beam Quadrupole (MBQ) magnets of CLIC, the Compact Linear Collider under study at the CERN Laboratory in Geneva, are part of a critical magnet family, considering the industrial production challenges. [...]  
[CERN-ACC-2020-0023](#) ; [CLIC-Note-1162](#). - 2020. - 6 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-17  
10:48 **Development of Prototype MgB<sub>2</sub> Superconducting Solenoid Magnet for High-efficiency Klystron Applications** / [Watanabe, H](#) (Hitachi, Hitachi) ; [Koga, T](#) (Hitachi, Hitachi) ; [Tanaka, H](#) (Hitachi, Hitachi) ; [Wakuda, T](#) (Hitachi, Hitachi) ; [Yamamoto, Akira](#) (KEK, Tsukuba ; CERN) ; [Michizono, S](#) (KEK, Tsukuba) ; [Syratchev, Igor](#) (CERN) ; [Mcmonagle, Gerard](#) (CERN) ; [Catalan Lasheras, Nuria](#) (CERN) ; [Calatroni, Sergio](#) (CERN)  
A wind-and-react MgB<sub>2</sub> solenoid magnet for klystrons has been developed. [...]  
[CERN-ACC-2020-0022](#) ; [CLIC-Note-1161](#). - 2020. - 7 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-17  
09:03 **Performance of MgB<sub>2</sub> Superconductor Developed for High-Efficiency Klystron Applications** / [Tanaka, Hideki](#) (Hitachi (JP)) ; [Suzuki, Takaaki](#) (Hitachi (JP)) ; [Kodama, Motomune](#) (Hitachi (JP)) ; [Koga, Tomoyuki](#) (Hitachi (JP)) ; [Watanabe, Hiroyuki](#) (Hitachi (JP)) ; [Yamamoto, Akira](#) (High Energy Accelerator Research Organization (JP)) ; [Shinichiro, Michizono](#) (High Energy Accelerator Research Organization (JP))  
An 8-km long MgB<sub>2</sub> wire for a prototype klystron magnet was made and evaluated. [...]  
[CERN-ACC-2020-0021](#) ; [CLIC-Note-1160](#). - 2020. - 6 p.  
[Full text](#)
- [Detailed record](#) - [Similar records](#)
- 2020-09-16  
16:11 **Applying Superconducting Magnet Technology for High-efficiency Klystrons in Particle Accelerator RF Systems** / [Yamamoto, Akira](#) (High Energy Accelerator Research Organization (JP)) ; [Michizono, Shinichiro](#) ; [Wuensch, Walter](#) (CERN) ; [Syratchev, Igor](#) (CERN) ; [Mcmonagle, Gerard](#) (CERN) ; [Catalan Lasheras, Nuria](#) (CERN) ; [Calatroni, Sergio](#) (CERN) ; [Stapnes, Steinar](#) (CERN) ; [Watanabe, Hiroyuki](#) (Hitachi (JP)) ; [Tanaka, Hideki](#) (Hitachi (JP)) *et al.*  
An MgB<sub>2</sub> superconducting solenoid magnet has been developed for electron beam focusing in X-band (12 GHz) klystrons for particle accelerator RF systems, to provide a central field of 0.8 T at 57 A and at ≥ 20 K. [...]  
[CERN-ACC-2020-0020](#) ; [CLIC-Note-1159](#). - 2020. - 6 p.  
[Full text](#)