

TLEP study news



FCC Study Scope and Structure

Future Circular Colliders - Conceptual Design Study for next European Strategy Update (2018)



**Michael
Benedikt**

Infrastructure

tunnels, surface buildings, transport (access roads), civil engineering, cooling ventilation, electricity, cryogenics, communication & IT, fabrication and installation processes, maintenance, environmental impact and monitoring,

Hadron injectors

Beam optics and dynamics
Functional specs
Performance specs
Critical technical systems
Operation concept

Hadron collider

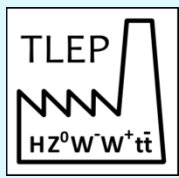
Optics and beam dynamics
Functional specifications
Performance specs
Critical technical systems
Related R+D programs
HE-LHC comparison
Operation concept
Detector concept
Physics requirements

e+ e- collider

Optics and beam dynamics
Functional specifications
Performance specs
Critical technical systems
Related R+D programs
Injector (Booster)
Operation concept
Detector concept
Physics requirements

e- p option: Physics, Integration, additional requirements

**The two pillars: pp and e+e-
mandate is to deliver full CDR for both machines
with an extended cost review**



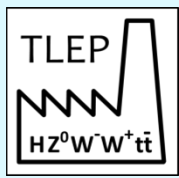
The combination of TLEP and the VHE-LHC offers, for a great cost effectiveness, the best precision and the best search reach of all options presently on the market.

*First look at The Physics Case of TLEP
arXiv:1308.6176v2 [hep-ex] 22 Sep 2013*



Team for kick-off and study preparation

Future Circular Colliders - Conceptual Design Study Study coordination, host state relations, global cost estimate Benedikt, Zimmermann					
Hadron injectors B. Goddard	VL Hadron collider D. Schulte	Infrastructure, cost estimates P. Lebrun	e+ e- collider J. Wenninger	High Field Magnets L. Bottura	Physics and experiments Hadron physic Experiments, infrastructure A. Ball, F. Gianotti, M. Mangano e+ e- exper., physics A. Blondel J.Ellis, P.Janot e- p physics + M. Klein
				Superconducting RF E. Jensen	
				Cryogenics L. Tavian	
e- p option Integration aspects O. Brüning		Specific Technologies (MP, Coll, Vac, BI, BT, PO) JM. Jimenez			
Operation aspects, energy efficiency, OP & mainten., safety, environment. P. Collier					
Planning (Implementation roadmap, financial planning, reporting) F. Sonnemann					



General TLEP VIDYO meetings

Time-slot:

Monday 15:00-17:00 CERN time; (6-8) am on Pacific time; 23:00-1:00 in Japan

Every two weeks, VIDYO, material on TLEP indico

Standing items: TLEP news, short reports from conveners, agenda for next time + a few feature items for information, discussion

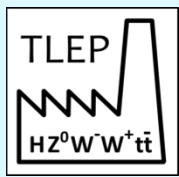
Emphasis in alternance Accelerator / Physics

There will be a single room at CERN

**First meeting 18 November with accelerator emphasis
for that date: aim at a first set of WP conveners so that work can begin in earnest**

**Comments suggestions and requests to the steering committee
tlep3-steering-group@cern.ch**



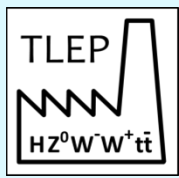


Project baselining

**We will need new parameter list for accelerator
and consistent running scenarios for physics studies
with version number and explanatory notes**

Aim at doing this by **mid January 2014 in view of FCC Kick-off meeting**





Calendar (to my knowledge)

2013 Oct 23 Frascati Higgs Workshop

2013 Oct 28 UK IOP meeting on TLEP (UCL)

2013 Nov 18 TLEP general VIDYO Meeting accelerator

2013 Dec 2 TLEP general VIDYO Meeting Physics

2013 Dec 9 TLEP general VIDYO Meeting Accelerator

2013 Dec 16-17 FHECC meeting in Beijing

2013 Dec 23 no meeting.

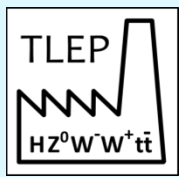
2014 Jan 6, 20 , 3 Feb etc... TLEP VIDYO (TBC)

2014 Feb 12-15 FCC Kick-off meeting

Next TLEP workshops TBD (Candidates to host?)

Alain Blondel TLEP VC 2013-11-18





Science and peace: taste the magic in the blend

Towards the next chapter

LS1 Report: achieving the unachievable

First H- beam accelerated at Linac4: 3MeV done, 157 MeV to go!

A thermosiphon for ATLAS

TLEP design study forges ahead

LHC data to be made public via Open Access initiative

Teens join the MoEDAL collaboration

CERN Apps meet in a forum

The HERMES Network: a messenger of international cooperation

A Saturday of science for girls

TEDx Organisers meet at CERN

Backed up and gone...

Ombuds' corner: Ethics and compassion

News from the Library: "Nature" is accessible to the CERN community

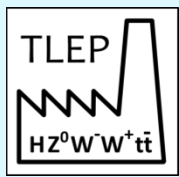
TOWARDS THE NEXT CHAPTER

In the late 1970s, while the CERN community was busy preparing the SPS to operate as a collider and planning for LEP, people also had their eyes on the next chapter in the unfolding story of CERN.



That the LEP tunnel should be built with a future hadron collider in mind was a given by the end of the decade. But there had also been proposals to build large proton storage rings, or re-equip the ISR with superconducting magnets. Some people had suggested building an electron-proton collider at CERN, and there were ambitious plans looking far into the future at a possible Very Big Accelerator to be built somewhere in the world, which went by its acronym VBA. For the field of particle physics, with its very long lead times, this is part of the normal cycle, and while most of those options never came to fruition, this process did pave the way for the LHC. Today, with the LHC programme underway, the time has come for CERN to start seriously considering the options for its post-LHC future.

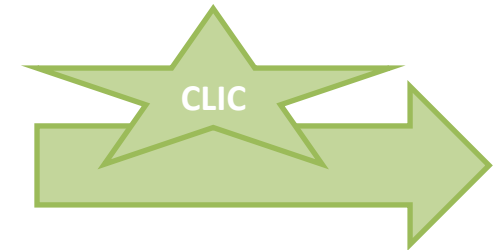


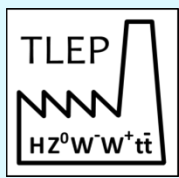


Perhaps the best known of those options is a linear collider, either at CERN or elsewhere, but it's not the only one. Another was identified by the recent European Strategy update, which includes a recommendation to carry out a vigorous accelerator R&D programme with an emphasis on hadron or lepton high-energy frontier machines. With this in mind, we are launching a five-year international design study to investigate the potential for Future Circular Colliders, the FCC study, which will put the emphasis on a hadron collider with a collision energy of 100 TeV housed in a tunnel 80-100 km around. This will complement the on-going linear collider studies, which are already well established.

The FCC study will also look at the potential for a lepton collider of the same size as an intermediate step, and it will examine the lepton-hadron option. All of these possible routes have their proponents, and informal working groups have already been established under the names of VHE-LHC for the hadron machine, [TLEP for the lepton machine](#) and VLHeC for the lepton-hadron collider. The FCC study brings them together in a formal framework, and has been fixed at five years in order to provide input to the next European Strategy update, scheduled for 2018. It will kick-off with a meeting hosted by CERN in February, the details of which can be found on [Indico](#).

In common with the VBA initiative of the 1970s, the FCC study will look at all the possible options for a circular tunnel, although the priority will be for a hadron machine. There's also another very important thing the two initiatives share: they recognise that Europe cannot do this alone. That's why we're inviting colleagues from around the world to join us in February, to help us begin the process that will lead to one potential new chapter in the global development of particle physics.





TLEP DESIGN STUDY FORGES AHEAD

As the Future Circular Collider (FCC) study is launched, one of its component parts, TLEP, enjoys a successful workshop at CERN. The FCC study looks at all options for a future circular collider with the emphasis on a hadron machine with TLEP as a possible intermediate step.

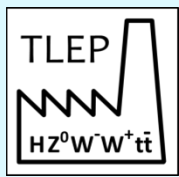


The poster of the sixth TLEP workshop

October 16 to 18 saw a three-day workshop on TLEP, the sixth in the series. The workshop took place at CERN and was well attended, informative and stimulating. To name just one of the influential people present, Herwig Schopper, ex-Director General of CERN and instrumental in the approval, construction and success of LEP, was among the participants.

But what exactly is TLEP? The name was, somehow serendipitously, coined from future lepton collider option studies and stands for triple-LEP, a machine three times the size of LEP. But this is now history. John Ellis, member of the TLEP steering group said: “I would like to think it stands for





<https://indico.cern.ch/conferenceDisplay.py?confId=282344>

iCal export More

UNIVERSITÉ DE GENÈVE CERN Future Circular Colliders Study Kickoff Meeting

Geneva Europe/Zurich timezone 12-15 February 2014 Search

Future Circular Colliders Kickoff Meeting

- Overview
- Organizing Committees
- Scientific Programme
- Important dates
- Timetable
- Contribution List
- Author index
- My conference
- Registration
 - Registration Form
- Payment of fee
- Social events
- Accommodation in Geneva
- Getting to University of Geneva
- Getting to CERN
- Practical information
- Video Services

This meeting is the starting point of a five-year international design study called “Future Circular Colliders” (FCC) with emphasis on a hadron collider with a centre-of-mass energy of the order of 100 TeV in a new 80-100 km tunnel as a long-term goal. The design study includes a lepton collider, seen as a potential intermediate step. It also examines a lepton-hadron collider option.

The international kick-off meeting for the FCC design study will be held at the University of Geneva, Unimail site, on 12–15 February 2014. The scope of this meeting will be to discuss the main study topics and to prepare the groundwork for the establishment of international collaborations and future studies.

The formal part of the meeting will start at noon on Wednesday 12 February and last until noon on Friday 14 February. It will be followed by break-out sessions on the various parts of the project on the Friday afternoon, with summary sessions until noon on Saturday 15 February.

Starts 12 Feb 2014 08:00
Ends 15 Feb 2014 18:00
Europe/Zurich

Geneva
To be defined

Subscribe to updates of the Web page, subscribe to the RSS feed [link](#).

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Important that e+e- community is well represented

Alain Blondel TLEP VC 2013-11-18





Kick-off meeting Agenda

Wednesday 12 February

Thursday 13 February

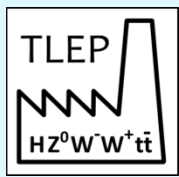
Friday 14 February

Saturday 15 February

At University of Geneva

	8:30 begin VLHC session	8:30 begin infrastructure session	9:00 at CERN
			Summary sessions
	10:30 coffee	10:30 coffee	10:30 coffee
			summary sessions
12:00 registration opens	12:30 end of plenary	13:00 end of plenary	13:00 end of meeting
	Lunch	lunch	
13:45 welcome address	14:00 TLEP session	14:00 breakout sessions	
14:00 DG introduction and session			
15:30 coffee	16:00 coffee	16:00 coffee	
18:00 Welcome drink	18:00 end of session	18:00 end of break-out session	
20:00 Public Lecture	19:30 collaboration dinner		
21:30 Vin de l'amitié			





Working group conveners nominations

**Nominations have started in the Accelerator group and in the Physics groups
e.g.**

WG1. EW physics at the Z pole : Roberto Tenchini

WG5. Flavour physics : Stéphane Monteil

WG10. Online software/computing : Christos Leonidopoulos

WG11. Detector Designs : Gigi Rolandi

YES, but needs to be formalized/finalized

WG4. Top Physics : Patrizia Azzi

WG6. QCD and gamma gamma : David d'Enterria

WG9. Offline software : Colin Bernet

need WG2 WW, WG3 Higgs, ... and a few more.





Kick-off meeting 12-14(15) February '14

location: University of Geneva

draft agenda, Wednesday 12 February

Session 1a – opening		
13:45	Welcome	Rector U. Geneva
14:00	Opening & introduction	Rolf Heuer
14:30	Energy Frontier after the Higgs discovery	Nima Arkani-Hamed
15:00	Precision Frontier at High Energies	Christophe Grojean
15:30	coffee break	
Session 1b – opening		
16:00	CERN Roadmap	Frederick Bordry
16:30	FCC Study	Michael Benedikt
17:00	Gotthard Tunnel Project	Felix Amberg

draft agenda, Thursday 13 February morning

Session 2a – hadron machine		
08:30	Hadron Collider Overview	Daniel Schulte
09:00	Synchrotron Radiation & Vacuum Concepts	TBC
09:30	Hadron Injector Options	TBC
10:00	R&D roadmap towards 16 T Nb3Sn dipole magnets ready for industrial production by 2025	TBC
10:30	coffee break	
Session 1b – hadron physics		
11:00	FCC Hadron Physics & experiments I	TBC
11:30	FCC Hadron Physics & experiments II	TBC
12:00	FCC Hadron Physics & experiments III	TBC



draft agenda, Thursday 13 February afternoon

Session 3a – lepton machine		
14:00	Lepton Collider Overview	Jorg Wenninger
14:30	Optics challenges	Bernhard Holzer
15:00	Lepton Injector Options	TBC
15:30	100-MW RF System at different Beam Energies and Intensities	Erk Jensen
16:00	coffee break	
Session 3b – lepton physics		
16:30	Lepton Physics	TBC
17:00	Lepton Experiments & Detectors	Gigi Rolandi
17:30	Future e-p physics	Monica d’Onofrio



draft agenda, Friday 14 February morning

Session 4a – infrastructure & operation		
08:30	Unconventional issues in conventional facilities	Philippe Lebrun
09:00	Geodesy and civil engineering	John Osborne
09:30	Cryogenics	TBC
10:00	Health, safety and environment	TBC
10:30	Availability, energy, operation	Paul Collier
11:00	coffee break	
Session 4b – closing		
11:30	Cultural, economical and societal impact of big science projects	TBC
12:15	Closing Remarks & Outlook	Rolf Heuer
12:30	End of formal meeting	



Fri afternoon

14:00 break out sessions (coffee break at 16:00)

- Technical infrastructure and civil engineering
- Hadron collider design (+ SC magnet technology, + injectors)
- Lepton collider design (+ SC RF technology + injectors)
- Hadron Physics, Experiments, Detectors
- Lepton Physics, Experiments, Detectors
- e-p Option
- FCC Overall physics and phenomenology

Saturday morning 9:00 (coffee break at 11:00)

- reports by conveners
- Warp-up and next steps (Michael Benedikt)

