



FCC-ee Joint accelerator and physics Video 29 June 2015

1. conference presentations and invitations
-- need a volunteer speaker's board
2. FCC-ee activities
-- upcoming workshops
3. recent reviews



EPS-HEP

Id 747 Flavours at a high luminosity e+e- collider (FCC-ee)

Talk, Monteil

Higgs Physics at the Future Circular Colliders (FCC)

Id: 671 **Status:** Under Review **Last modified:** 5 Jun 2015 13:40

Talk, Klute

Precision measurements of the top quark couplings at the FCC

Id: 672 **Status:** Submitted **Last modified:** 7 Jun 2015 12:54

Talk, Janot

Precision Electroweak measurements at the Future Circular Colliders

Id: 673 **Status:** Submitted **Last modified:** 7 Jun 2015 12:54

Talk, Dam

The FCC-ee design study: luminosity and beam polarization

Id: 674 **Status:** Submitted **Last modified:** 7 Jun 2015 13:12

Koratzinos(posters)

The FCC-ee physics experimental program

Id: 675 **Status:** Submitted **Last modified:** 7 Jun 2015 12:54

Blondel (poster)
or volunteer



Other invitations:

LHCP15 (31-Aug - 5 sept) : Fulvio

"17th Lomonosov Conference" (Moscou, 20-26 aout) David d'Enterria
ECT* Trento (8-11 sept), David d'Enterria

13-18 septembre: Pologne - <http://indico.if.us.edu.pl/event/us2015>
speaker on FCC-ee **Need volunteer.**

August 2-10 Summer school, campus of Shandong University at Weihai
City (<http://en.wh.sdu.edu.cn/enDefault.html>)
3 lectures of 1.5 hours. **Alain will go**

Workshop 10-12 August - CEPC physics workshop in August
(<http://indico.ihep.ac.cn/event/4937/overview>). I will be in the committee
but cannot go. **need talks**

Conference in Crete: 23-30 August indico.cern.ch/event/icnfp2015
invitation for talk on FCC-ee need volunteer

There is a demand --

**WE NEED A SPEAKERS' BOARD system and chair. M. Klute will
discuss this next time.**



FCC-ee activities

-- upcoming workshops

Detector workshop

1st FCC-ee mini-workshop on Detector Requirements

17-18 Jun 2015 - 13:00 - CERN - 40-5-A01 see report later.

First FCC-ee mini-workshop on Precision Observables and Radiative Corrections

13-14 Jul 2015 - 14:00 - CERN - TH Conference Room

Workshop on high-precision α_s measurements: from LHC to FCC-ee

<https://indico.cern.ch/event/392530/> 12 Oct - 13 Oct 2015 (CERN)

Higgs physics workshop Markus Klute

<https://indico.cern.ch/event/401590/> 24-25 September 2015

Next General FCC-ee physics workshop in november

Asked John Ellis to organize in London.

Oliver Buchmuller, Mario Campanelli, John Ellis, Andreas Korn, Bjorn Penning, as LOC

Favorite date : 11-13 November 2015



FCC Internal Reviews

presentation of physics requirements 5 June 2015

FCC-hh (Michelangelo Mangano)

FCC-ee (Patrick Janot)

(revised version uploaded on this meeting page)

FCC tunnel footprint and implementation Thursday 11 June

FCC-ee crab-waist scheme Friday 12 June

Expected luminosity as a function of \sqrt{s} (3)

- Number of events / year
 - ◆ Summed over all IPs

\sqrt{s} (GeV)	B ₄	B ₂	C ₄	C ₂	ILC programme	@FCC-ee
90 (Z)	3.6×10^{11}	2.3×10^{11}	3.7×10^{12}	2.4×10^{12}	$10^9 ?$	1 day C ₄
160 (WW)	1.7×10^7	1.0×10^7	6.1×10^7	3.0×10^7	$10^5 ?$	1 week C ₄
240 (HZ)	4.2×10^5	2.8×10^5	7.0×10^5	4.4×10^5	7×10^4	1 month C ₄
350 (tt)	3.0×10^5	1.9×10^5	4.2×10^5	2.6×10^5	1.4×10^5	4 months C ₄
350 (WW → H)	1.8×10^4	1.2×10^4	2.5×10^4	1.5×10^4	3.5×10^4 @500 GeV	1.5 years C ₄

(2 years)

- ◆ Do we need that much more luminosity at FCC-ee ? For what physics ?

Summary : the FCC-ee physics programme (1)

- Time needed (in years) at each centre-of-mass energy with full RF power

	\sqrt{s}	C4	C2	B4	B2
$N_Z=10^{(12)13}$	90	(<1) 2.5	(<1) 4	(2.5) 25	(4) 40
	160	1	2	3	5
	240	3	5	5	7
	340-370	4	6	5	7
Beyond the core programme, under study					
	88 / 95 (α_{QED})	1	1.5	10	15
	125	1	1.5	8	12
	Highest ?	3?	5?	3?	5?
	Commissioning	2	2	2	2
	TOTAL	(9) 10.5 (17.5)	(14) 17 (27)	(15.5) 38 (61?)	(24) 59 (93?)

- Only B4 and B2 configurations are used at and above 350 GeV



-- crab waist scheme review

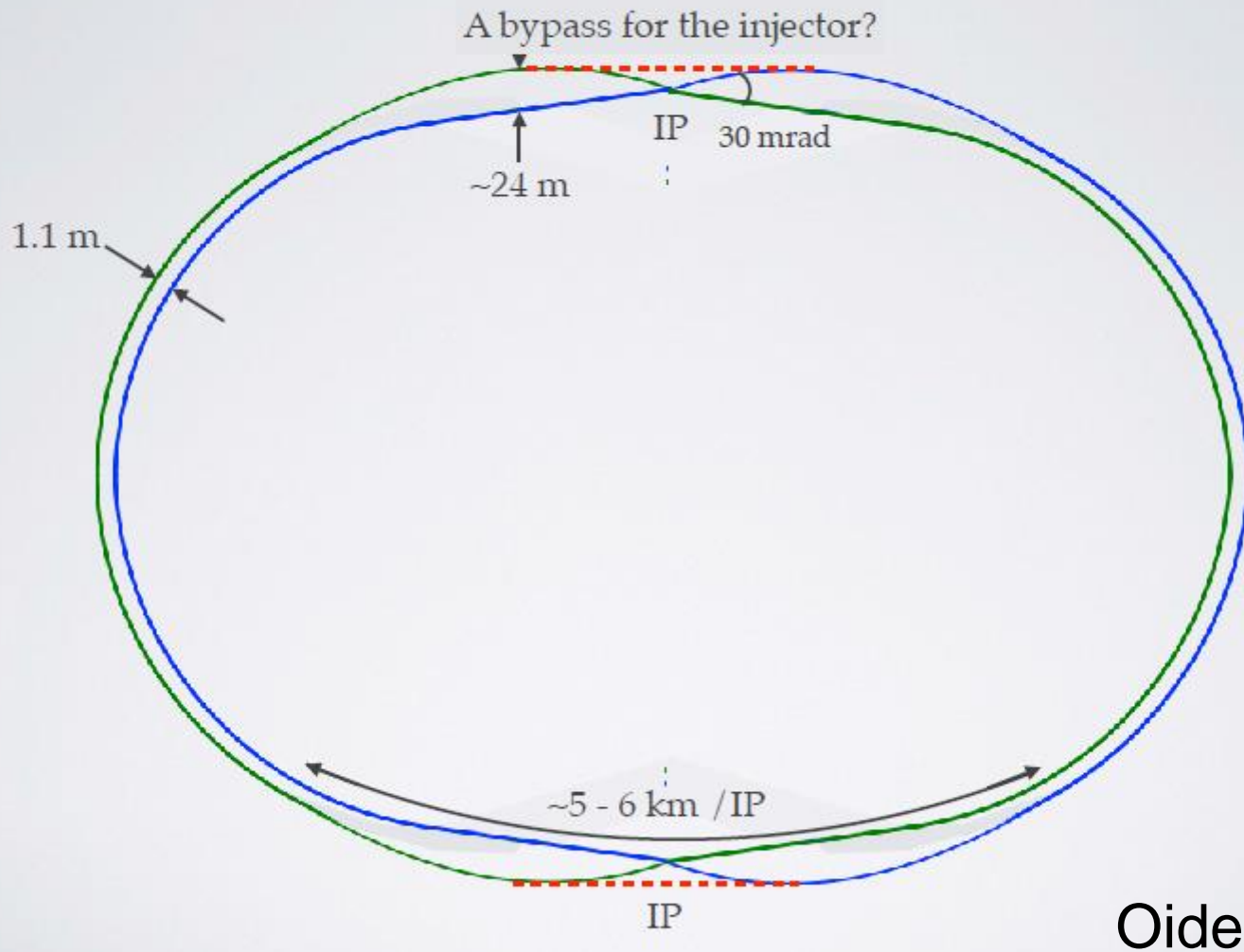
should be encouraged as it provides high luminosity.
principle is sound.

difficulty with several points of implementation

- synchrotron radiation in the experimental section.
 - .should try to avoid any dipole magnet stronger than those in the arcs
 - .limits on critical energy and power should be evaluated for the experiment and for the environment
- solenoid compensation and interface with experiment
 - . will require to establish the optics principles of the compensation
 - . and then a work party between magnet designers

report has been prepared by Oide-san.

A Conceptual Layout



Oide



FCC tunnel footprint and implementation Thursday 11 June

noted that there is not a single solution that works for the electron machine yet.
Need scheme for RF staging, implementation of bypasses etc... to be decided

- possibility to have a non flat geometry was discussed
 - .leads to less deep access shafts and caverns
 - .at this point not sure if this is either needed or sufficient
 - .leads to loss of top energy in hadron collider
 - .delicate corrections for spin or vert. dispersion in electron machine
 - but an elegant solution was found using solenoid and twisted quads to adapt one bending plane and spin orientation to the next.(Kopp) should work at all energies.
 - spin matched at zeroth order both at Z and WW. Higher orders?
- more studies needed concerning deep caverns in Molasse terrains

summary by P.Lebrun at FCC coordination group 24 June.



MOUs: we need to get our MOU signed !

If your institute does not have an MOU, please let us know asap

→ We will be chasing you