FCC-ee MDI mini-workshop, CERN, January 16-27 2017
https://indico.cern.ch/event/596695/

Overview

This mini-workshop for the Machine Detector Interface design of the FCC-ee collider aims at revisiting/validating several open issues with worldwide experts.
The main topics have to be discussed before freezing the baseline MDI layout, such as the various beam-pipe dimensions, choice of l*, final magnet parameters, space and location of luminosity monitors.
After this mini-workshop has made, or confirmed, the basic choices for the layout, a fully coherent study of all related systems and hardware will be performed in time for the CDR report. Further optimization work beyond the baseline should then take place either at an appropriate level in parallel to the baseline development, or in a second full iteration later on.

Overlapping in time with the FCC-ee MDI mini-workshop, the 1st FCC Physics Workshop will take place, in the week 16-20 January. Its agenda is available at the following link:
https://indico.cern.ch/event/550509/

The MDI mini-workshop is organized with some presentations to open the discussion on the various inter-connected topics.

Main topics to be addressed:

- l* choice
- Incoming/outgoing layout
- Trapped mode analysis with symmetric vs asymmetric final focus quads
- Beam pipe apertures, material, thickness and masking
- IR quadrupoles design
- Detector Luminosity Calorimeter
- Integration of magnetic system and overall IR layout

As one outcome from the FCC-ee design review in October 2016, the chosen baseline optics consists of a separated function arc lattice and the asymmetric IR optics designed by Katsunobu Oide.

We would like to compose a short document summarizing the mini-workshop discussions.

Monday 16/1

The following talks at the 1st FCC Physics Workshop could be of interest:
09.10-09.40 Status of the FCC Project (M. Benedikt)
09.40-10.10 FCC accelerator parameters (F. Zimmermann)

The FCC-ee MDI mini-workshop starts at 2pm:
14:00-14:30 Introduction (M. Benedikt and F. Zimmermann)
14:30 -15:00 Workshop Plan (M. Boscolo)

15:00-16:00 Optics (K. Oide)
16:00-17:00 Optics discussion

Tuesday 17/1
09:30-10:00 Trapped Modes Analysis (A. Novokhatski)
10:00-11:00 Trapped modes and Electron Cloud in the Interaction Region of FCC-ee (E. Belli)
11:00-12:00 Optics Issues Discussion & Trapped Modes Discussion

Afternoon: Working session

Wednesday 18/1
09:30-10:30 IR Layout with SR constraints (M. Sullivan)
10:30-11:00 SR with MDISim (H. Burkhardt)
11:00-11:30 SR with SYNRAD+ (R. Kersevan)
11:30-12:30 Discussion on SR related issues

Afternoon: Working session

Thursday 19/1
09:30-10:30 LumiCal (M. Dam)
10:30-11:30 Discussion on LumiCal
11:30-12:20 Fast Luminosity monitor for SuperKEKB (D. Khechen)

Afternoon: Working session

Friday 20/1
09:30 Magnetic Integration System and IR Mechanical Layout (H. Ten Kate) **[tbc]**
10:30-12:00 Discussion

Afternoon: Working session

Monday 23/1
09:00-12:00 Working session

14:00-15:00 IR Quadrupole Design (P. Vobly) **[tbc]**
15:00-17:00 Discussion on IR Quadrupole Design

Tuesday 24/1
10:00-10:20 SuperKEKB IR SC magnets (N. Ohuchi)
10:20-12:30 Discussion & additional presentations

Wednesday 25/1
Discussion & write-up

Thursday 26/1
Discussion & write-up

Friday 27/1
09:00-13:00 Close-out with conclusions

Optics Issues

- L* choice (close connection to lumical issues)
- incoming/outgoing layout
- Solenoid Compensation Scheme

Synchrotron Radiation Issues

- Beam pipe material and thickness
- Beam pipe apertures
- IR Shielding & masking
- SR into detector

IR Quadrupole Design

Overall Magnets integration

Trapped Mode analysis

HOM absorbers and cooling system

Luminosity Monitor for Detector

- position
- angle
- window at beam pipe?
- (fast Luminosity monitor for luminosity tuning?)