

Review of FCC-ee crab waist option, 12 June 2015 – DRAFT V7

The overall planning for the FCC-ee machine design foresees to converge on the optics and beam dynamics by autumn 2015. Presently two variants are being studied, the crab waist – small emittance option, mainly by BINP, and the small crossing angle – variable cell option with constant geometric emittance, mainly by CERN. The crab waist study is well advanced and an intermediate (internal) review is planned for 12 June 2015, to evaluate the status and detect any critical areas. Work activity on the small crossing angle and possible other optics versions will be increased in the coming months, to arrive at a comparable level. An external review of both variants is then foreseen for second half of September 2015.

Schedule of presentations for the intermediate review of the crab waist option:

time	length	title	speaker(s)
08:30-08:45	15 min.	Review charge & constraints	Michael Benedikt and Frank Zimmermann
08:45-09:15	30 min.	BINP studies overview	Eugene Levichev
09:15-09:45	30 min.	Parameters, beam-beam and luminosity performance	Dmitry Shatilov
09:45-10:15	30 min.	IR optics and chromaticity correction	Anton Bogomyagkov
10:15-10:30	15 min.	coffee break	
10:30-11:00	30 min.	Dynamic aperture and momentum acceptance	Pavel Piminov
11:00-11:25	25 min.	Polarization, spin rotation (for planar machine and for machine with a kink),	Ivan Koop
11:25-11:50	25 min.	IR synchrotron radiation & quantification	Anton Bogomyagkov, Helmut Burkhardt
11:50-12:15	25 min.	IR quadrupole & solenoid design parameters and assumed field qualities	Eugene Levichev
12::15-12:30	15 min.	Questions and discussions	
12:30-13:30	60 min.	<i>Lunch break</i>	
13:30-15:30	120 min.	Executive session	

Presentations should be uploaded at the latest by 18:00 on the evening before the review (11 June 2015).

Review charges:

- Are the parameters reasonable and feasible (emittances, beta*, dynamic aperture with momentum acceptance)?
- Assess the solenoid configuration and compensation scheme
- Choice of crossing angle and final quadrupole design
- Is there a complete consistent design for two energies (Z and top running)?
- Is the IR synchrotron radiation (power, critical energy) acceptable or can it be reduced to an acceptable level ; compatibility with the insertion length and tunnel constraints

- Which approach (es) should be taken for polarization and energy calibration?
- Have any important, critical items be overlooked? (kinematic terms, fringe fields, field errors)
- Which items should be further studied with high priority?

Invitees:

Speakers: Anton Bogomyagkov, Helmut Burkhardt, Ivan Koop, Eugene Levichev, Pavel Piminov, Dmitry Shatilov

Reviewers: Alain Blondel, Stephane Fartoukh, John Jowett, Jean-Pierre Koutchouk, Katsunobu Oide (Chair), Pantaleo Raimondi

Additional invitees: Michael Benedikt, Bernhard Holzer, Rogelio Tomas, Frank Zimmermann

Date and place:

Friday, 12. June 2015, 08:30 – 15:30 (presentations, discussions, and executive session), CERN, 60-5-012.