

eRHIC IR Design Meeting

Minutes for Friday, July 26, 2019

Present: Holger Witte (Chair), Elke Aschenauer, Kyle G. Capobianco-Hogan, Bill Christie, Christoph Montag, Brett Parker, Steven Tepikian

Agenda

1 Update on electron Matching—Stephen T.	1
2 Simulation of Transverse Electron Beam Tails—Christoph	2
3 Task List for CD1 & Milestones—Holger W.	2
4 Next Meeting	2
4.1 Draft Agenda	3

1 Update on electron Matching—Stephen T.

Title: “Electron Storage Ring Version 5.1”

File: [esr-ring-update-version-5p1.pdf](#)

1. Kink in ESR survey around 4.5 rad (IP12) may be too close to yellow ring [slide 4].
2. Correctors are not yet in [slide 7].
3. Next version will change Arc-7 back to F-cells and use phase trombones in IP8 [slide 8].
4. 30 T/m max for quads in short solenoid section (for 10 GeV beam) [slide 9].
5. Christoph: Need to reduce the number of different types of quads.
6. Christoph: Asked Alexei to look into Ferdinand’s cancelation idea, but he’ll need a design with both IR6 and IR8 squeezed (not just IR6).
7. Bill: Holger can add vetting matching solutions from a practical standpoint to task list.
8. Emittance higher than we’d like at 33.9 nm [slide 17].
9. W chromatic function higher than he’d like [slide 19].
10. PTC gives slightly different chromaticity.
11. Bill: The emittance we end up with for 18 GeV will need to be recorded in parameter table [slide 24].

12. Bill: Milestone for parameter table to be fixed some number of months before internal CD1 review for simulations.
13. Damping time shown on slide 24 is transverse, not longitudinal.
14. Holger: Push quads harder instead of lengthening them.
15. Elke: Needs IR12 layout to find out where “[her] poor lepton polarimeter” can fit.

2 Simulation of Transverse Electron Beam Tails—Christoph

Title: “Simulation of Transverse Electron Beam Tails”

File: [electron-tails-26July2019.pdf](#)

1. Non-Gaussian tails from beam-beam synchrotron radiation [slide 6].
2. Can collimate tails beyond 15σ away.

3 Task List for CD1 & Milestones—Holger W.

Title: “pCDR To CDR Updates”

File: [2019-07-26_IRMeetingCDR.pdf](#)

1. Synchrotron radiation fans in pCDR are based on incorrect emittance values; the real syn. rad. fans don’t actually fit in apertures [slide 8].
2. “Bob’s ‘worst case’” is an artificial worst case that is actually worse than any of the real cases from Vadim’s parameter table [slides 9–10].
3. Elke: One of her guys will simulate the syn. rad.
 - (a) Elke: Syn. rad. is important enough to have three different simulations to cross-check.
4. Task list is available online ([here](#)). Need estimated time. [slide 2]
5. Licensing issue needs to be sorted out [slide 4].
6. Not sure why the model won’t converge when similar test cases did [slide 5].
7. Double helix code—a python implementation of code for Opera’s internal scripting language from Vector Fields—is old, difficult to maintain, and contains a major bug. It will probably need to be rewritten. [slide 7]

4 **Next Meeting:** Friday, August 9, 2019 from 2:30 to “3:30” p.m.

4.1 *Draft Agenda*

1. Simulation Update—Elke, et al.
2. Update on Plan and Resources to Get to CD1—Holger
3. Functional Impact of Decreasing y -Divergence of Electron and Hadron Beams on Luminosity—Vadim
4. Any Other Business