

# 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

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## 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 cancellation idea, but he’ll need a design with both IR6 and IR8 squeezed (not just IR6).
7. Emittance higher than we’d like at 33.9 nm [slide 17].
8.  $W$  chromatic function higher than he’d like [slide 19].
9. PTC gives slightly different chromaticity.
10. Bill: The emittance we end up with for 18 GeV will need to be recorded in parameter table [slide 24].
11. Bill: Milestone for parameter table to be fixed some number of months before internal CD1 review for simulations.

12. Damping time shown on slide 24 is transverse, not longitudinal.
13. Holger: We should investigate how much of a field gradient margin the quads have before we increase their lengths.
14. 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  $15\sigma$  away.

## 3 Task List for CD1 & Milestones—Holger W.

Title: “pCDR To CDR Updates”

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

1. There is an open question about the synchrotron radiation fan size on the rear side of the IR, which needs to be clarified [slides 8–10].
2. 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.
3. Task list is available online ([here](#)). Need estimated time. [slide 2]
4. Multi-core Opera licensing options were discussed (pricing and other details in presentation) [slide 4].
5. Source of error in nodal jump calculations in Opera needs to be investigated [slide 5].
6. 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 bug related to the wire cross-section calculation. 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