

eRHIC IR Design Meeting

Draft Minutes for Friday, December 13, 2019

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1 Update on vacuum chamber—C. Hetzel

Title: “IR meeting - Vacuum 12-13-19”

File: [IR meeting - Vacuum 12-13-19.pptx](#)

1. A better view of slide 1 is available as a separate PDF file:
Title: “Detector chamber.idw”
File: [Detector chamber.pdf](#)
2. Materials:
 - (a) Beam pipe walls (excluding ~60 in section inside detector): 2219 aluminum
 - (b) Wall of ~60 in section: beryllium
 - (c) Beam pipe flanges: stainless steel
3. See also “[Synrad 1.4 algorithm](#)” [slide 7].
4. SynRad results on slides 9–10 is based on quads only.
5. Beryllium section 62 mm diameter.
6. SynRad results on slide 11 is based on DB6 dipole and SynRad results on slide 12 includes quads and DB6 (both with and without absorber/mask).
 - (a) DB6 produces significant synchrotron radiation. We need to look into this more.
7. All results are based on 18 GeV lattice. We really need to look into the other energies.
8. M. Sullivan: Does SynRad assume a Gaussian beam?

- (a) Q. Wu: Manual says it assumes a Gaussian beam with 1 s.
9. Smooth beam pipe reflects all incident x-rays due to small (glancing) angle of incidence.

2 Update on layout—K. Hamdi

Title: “EIC-IP6-121219”

File: [EIC-IP6-121219.pptx](#)

1. H. Witte: Electrons going left.
2. B. Christie: We should start including keys for electron and proton directions in figures.
3. S. Plate: Only 0.25 m between B1pF and B1ApF. Will need to have B1pF leads pass through B1ApF in a bus and come out of forward end of cryostat.

3 Rear electron crab SR problem—B. Palmer

Title: “1911-work-v5”

Subtitle: “Electron lattice options”

File: [1911-work-v5.pdf](#)

1. Half of B3eR syn rad makes it past the mask and into the eR crab cavity in current rear baseline (“Version K”) [slide 3].
2. “Version L” [slide 7]
 - (a) Eliminates B3eR.
 - (b) Optimized B6eR field goes to nearly zero as a result.
3. “Version N” [slide 7]
 - (a) Eliminates B3eR and B6eR and allows B2eR field to vary.
 - (b) Almost no change in B2eR field.
 - (c) B14eR field significantly reduced.
4. eF crab cavity interferes with neutron cone in forward baseline (“b”) [slide 11].
5. Summary of cases: δ is free space, negative values indicate interference [slide 15].
6. H. Witte: Why is the design on slide 13 called “Holger’s crab-beam exchanged” when he got it from one of R. Palmer’s slides?
7. Can’t reduce field of B2eR to get rid of SR to lumi monitor. Could split it into a low field B2AeR and a high field B2BeR, but there isn’t much room for that.
 - (a) H. Witte: What about making Q1eR and Q2eR into combined function magnets?
 - (b) R. Palmer: That could work.

4 All other business

None.

5 Next Meeting: Friday, December 20, 2019 from 2:30 to “3:30” p.m.

5.1 Draft Agenda

1. 10 GeV SynRad simulations—C. Hetzel
2. Status on geometry setup and simulations—A. Kiselev
3. All other business