

EIC IR Design Meeting

Draft Minutes for Friday, May 15, 2020

Agenda

- 1 Physics simulations with collider magnets inside detector region—friends from Physics (J. Adam) 1
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 - 3 Status and to-do list for CDR IR section—H. Witte, E.C. Aschenauer, and C. Montag 2
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- 1 Physics simulations with collider magnets inside detector region—friends from Physics (J. Adam)

Title: “Update on low- Q^2 tagger”

File: [JA-Low_Q2_tagger_20200515_v2.pdf](#)

1. Regarding putting Q1eR inside the central detector [slides 14–18]:
 - (a) No magnets within the detector region ($z = \pm 4.5$ m) at IR-6.
 - (b) An IR-8 detector may still need such magnets due to additional spacial constraints.
2. Summary [slide 18]
 - (a) Region in Q^2 from 10^{-2} GeV² to 10 GeV² is sensitive to physics as it is transition between photoproduction and electroproduction
 - (b) Q^2 coverage depends on available inner radius for ECAL — please let me know as 10 cm optimistic radius was used now
 - (c) Small change in Q^2 acceptance with reduced central solenoid field
 - (d) There is a variation in quadrupoles behavior across Geant4 versions — would be good to know beam size at Q3eR to compare
 - (e) Summary on detectors placement, frame with Q1eR to B2eR collinear with electron beam and placed at $x = 0$:

Tagger 1	Tagger 2	ECAL
$z_{\text{start}} = -24$ m	$z_{\text{start}} = -37$ m	$z_{\text{start}} = -3.28$ m
$x_{\text{center}} = 52.856$ cm	$x_{\text{center}} = 66.188$ cm	$r_{\text{inner}} = 8$ cm (default), 10 cm (Q1eR in)
Front size = 40×40 cm ²	Front size = 30×20 cm ²	$r_{\text{outer}} = 2.87$ m
Angle = 18.332 mrad	Angle = 18.332 mrad	

(f) All Geant4 and analysis codes are here: github.com/adamjaro/lmon

2 Solution to parameter set with equal β^* for protons and electrons—B. Palmer

1. Postponed while apparent beam-beam effect issues are investigated.
2. A requirements document for β^* constraints and limitations should be prepared.

3 Status and to-do list for CDR IR section—H. Witte, E.C. Aschenauer, and C. Montag

Title: “To Do List IR”

File: [2020-05-15_ToDoListIR.pdf](#)

1. F. Willeke: working backwards
 - (a) End of June: Take a snapshot of the design to use when updating the CDR for the OPA Review.
 - (b) End of July: Finish updating CDR based on end of June snapshot for OPA Review.
 - (c) Early September (9 or 10): OPA Review
 - i. Need an updated report, it doesn't have to be polished.
 - (d) End of October: Deadline for changes that didn't make it into the end of June snapshot for the OPA Review to be incorporated into the design that the CD1 Review version of the CDR will be based on.
 - (e) January 26, 2021: CD1 Review
 - i. Need a fairly polished report by this point.
2. Q. Wu: Will second IR be included in the CDR?
 - (a) F. Willeke: Will need to demonstrate that a second IR is feasible.
 - (b) W. Christie: Probably will have to show trade-offs for different designs.

4 All other business

None

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1. To be determined