

EIC IR Design Meeting

Draft Minutes for Friday, September 18, 2020

Agenda

- 1 Comparison of the acceptances of the two magnet configurations with and without shielding—A. Jentsch on behalf of Friends from Physics 1
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- 1 Comparison of the acceptances of the two magnet configurations with and without shielding—A. Jentsch on behalf of Friends from Physics

Title: “Effect of 50 cm Lattice Shift on FF Acceptances”

File: [particle_scan_50cm_IR_shift_v1.pdf](#)

1. RP_Ext = off-momentum detector
2. RP = Roman Pots
3. Sensors have not been realigned based on shifted IR pending verification of magnet coordinates.
4. Takeaways [slide 13]
 - (a) The 50 cm shift has only a small impact on the proton acceptance, particularly at the highest pt.
 - i. I can study this more carefully by isolating regions of phase space relevant to a particular subsystem.
 - (b) Neutrons (not shown here) see almost no change (marginal decrease in acceptance on one side of the aperture).
 - (c) It would be helpful to have an *official* BMAD version of the layout in my coordinate system (because of the physics event generators).
 - i. Hadron going in the positive z-direction, 25 mrad crossing angle all in the hadron beam.
 - ii. Feel free to email me for more details.
5. W. Christie suggested presenting a ratio of the acceptances for the next round of the analysis.
6. Black Monte Carlo lines in plots indicate the number of particles generated.

2 Simulations of ^3He breakup—A. Jentsch on behalf of Friends from Physics

Title: “e+He3 Full Simulations”

File: [preliminary_He3_results_short_version_9_18_2020_IR_meeting.pdf](#)

1. E.C. Aschenauer: BeAGLE takes into account Fermi momentum.
2. Conclusion [slide 12]
 - (a) The acceptance for spectator di-protons in He-3 breakup is quite good!
 - i. This acceptance will be dependent on the details of the RP layout especially.
 - A. Many of the hits are on the outer edge of the active area.
 - B. Further reinforces need for large sensors.
 - (b) Need to re-run these simulations with the shifted IR. Rotation of quads could have an impact.
 3. Roman pots typically $\gtrsim 1\text{ mm}$ ($\gtrsim 10\sigma$) from beam.

3 All other business

1. E.C. Aschenauer: It would be good to get the IR layout of second detector at some point.

4 Draft agenda for Friday, September 25, 2020 from 2:30 to 3:30 p.m.

1. Synchrotron radiation with 50 cm shifted IR—C. Hetzel
2. IR magnet layout—Friends from Magnet Division
3. All other business

Contact H. Witte or W. Christie to be added to the agenda.