

# Electron-Ion Collider



Building 1005S  
P.O. Box 5000  
Upton, NY 11973-5000  
Phone (631) 344-5865  
ksmith@bnl.gov

Date: September 12, 2024

To: G. Biallas, TJNAF (retired); N. Evans, ORNL; A. Jain, ANL; M. Allitt, ORNL  
From: Kevin Smith, EIC Deputy Technical Director  
Subject: Charge for EIC ESR D1/D3 and D2 Dipole FDR – October 3, 2024

Signed by:

*Kevin Smith*  
38E3FAB95ABA4DD...

9/16/2024

The Electron-Ion Collider (EIC) is a major new facility, fully international in character, being designed and built at the U.S. Department of Energy's (DOE) Brookhaven National Laboratory (BNL) in partnership with the Thomas Jefferson National Accelerator Facility. The Electron Storage Ring (ESR) for the EIC requires two new design copper coil/steel core accelerator dipoles magnets: the D1/D3 dipoles and the D2 dipoles. These dipoles will be part of the ESR ring lattice with high field quadrupole and sextupole magnets from the Argonne Photon Source that have been received and are being repurposed. A preliminary design review for the D1/D3 and D2 dipole magnets and final design review of the repurposed quadrupole and sextupole magnets have been successfully completed.

We are now preparing the documents for the Procurement Readiness Review (PRR) for the dipole magnets. The successful completion of this Final Design Review is necessary to proceed with the PRR. This review will focus on our readiness to request CD-3B funding for procurement of production dipole magnets in January 2025.

We would appreciate your assistance in assessing our readiness and final design maturity for the D1/D3 and D2 dipoles. The committee is asked to respond to the following charge questions:

1. Are the ESR normal conducting D1/D3 and D2 dipole magnets requirements sufficiently mature, understood, and documented?
2. Do the ESR D1/D3 and D2 dipole magnet designs meet the requirements?
3. Are the ESR D1/D3 and D2 dipole magnet interfaces sufficiently defined, understood, and documented?
4. Are the design analysis, simulations, drawings, and specifications sufficient?
5. Have recommendations from the prior review been addressed?
6. Have risks, including technical and safety risks, been identified and are mitigation plans adequate?
7. Are quality assurance and acceptance plans adequate?
8. Is the overall design maturity sufficient to proceed with the procurement phase?

We would appreciate receiving the committee's report within 14 days of the review's conclusion.

cc: J. Fast, L. Lari, G. Mahler, C. Montag, S. Nagaitsev, T. Russo, A. Seryi, K. Smith, J. Tuozzolo, K. Wilson, J. Yeck