

# Charge for the Review of ePIC Software and Computing

September 26-27, 2024

The Electron-Ion Collider will be a state-of-the-art QCD facility located at Brookhaven National Laboratory (BNL). Its realization is led jointly by BNL and Jefferson Lab. The accelerator and a detector system will be constructed over the next ten years as a DOE construction project and with non-DOE in-kind contributions. The ePIC collaboration together with the EIC Project is designing the detector systems to meet the scientific goals as expressed in the NAS assessment (2018) and further described in the 2023 NSAC Long Range Plan.

The ePIC computing model is anticipated to reflect the tight integration among the detector elements, the joint-responsibilities of BNL and Jefferson Lab as host Labs, and to allow for in-kind contributions to ePIC Software and Computing by international partners.

The EIC Resource Review Board (RRB) provides coordination among the different funding partners during the project's detector development, construction, and operations phases. Oversight of the ePIC Computing Model and resource contributions are included in this RRB.

As the EIC is a partnership between BNL and Jefferson Lab, it is reflected in the creation of the EIC Computing and Software Joint Institute (ECSJI). The ECSJI was formed on October 1, 2023. This first step enables the resource planning needed to support the ePIC collaboration and fostering the international collaboration.

A committee of experts, the EIC Computing and Software Advisory Committee (ECSAC), has been formed to advise the host laboratories on the progress and status of computing and software for the ePIC collaboration. Reviews are expected to take place on a regular cadence, with a charge reflective of the EIC schedule, the stage of the ePIC experiment, and impending deadlines. This charge covers an assessment of the ePIC computing model in preparation for the November 2024 RRB meeting. The scope of this review also includes the organization of the newly formed ECSJI.

1. Is there a comprehensive and cost-effective short and long-term plan for the software and computing of the experiment?
  - 1.1. The pre detector technical design report (TDR) is scheduled to be delivered in 2025. Are the resources for software and computing sufficient to deliver the TDR?
  - 1.2. Is the design of the ePIC computing model and resource needs assessment adequate for this stage of the project?
  - 1.3. Is the ePIC computing model flexible? Can it evolve and integrate new technologies in software and computing?
2. Are the plans for software and computing consistent and integrated with standard practices across nuclear physics and particle physics communities, especially given technical evolution over the next decade?

3. Are the ECSJI plans to integrate into the software and computing plans of the experiment sufficient?
4. Are the plans for integrating international partners' contributions flexible and adequate at this stage of the project?

An agenda will be developed with talks from the ePIC collaboration and ECSJI to address these charge elements.

A report should be submitted by November 13, 2024.

We appreciate your willingness to lend your time and expertise in this important process and look forward to receiving your assessment.



---

Ahbay Despande  
*Associate Laboratory Director*  
Brookhaven National Laboratory

8/9/2024

---

Date



---

David J. Dean  
*Deputy Director for Science*  
Jefferson Lab

8/9/24

---

Date

Review Committee

Mohammad Al-Turany (GSI)  
David Brown (LBNL)  
Simone Campana (CERN)  
Pere Mato (CERN)  
Christoph Pauss (MIT)  
Verena Martinez (UMass)  
Frank Wuerthwein (UCSD)

Ex-Officio

Amber Boehnlein (JLAB)  
Alexei Klimentov (BNL)

CC

John Lajoie (ORNL)  
Silvia Dalla Torre (INFN Trieste)  
Markus Diefenthaler (JLAB)