

# EIC UGM Debrief | Overview



- **Right:** [overview of meeting](#) from main page. Busy meeting!
  - 2 days of EICUG business
  - 2 days of ePIC business
  - 2 days of ePIC workfests
- **Workfests:** had [6 workfests in total](#)!
  - [EDT PWG Workfest](#)
  - SRO/DAQ WG Workfest ([part 1](#), [part 2](#))
  - AI Workfest ([townhall](#), [discussion](#))
  - [Tracking WG Workfest](#)
  - [AC-LGAD Workfest](#)
  - [TOF Mechanics Workfest](#)
- ☞ I attended (parts of) SRO/DAQ Workfest, AI workfest, and tracking workfest
- **Tutorials:** 3 new(!) tutorials
  - [PODIO via track-cluster matching](#) (me)
  - [VIRTUE](#) (Sean)
  - [AI Usage through MCPs](#) (Sasha)

|           | 11 <sup>th</sup> July | 12 <sup>th</sup> July | 13 <sup>th</sup> July    | 14 <sup>th</sup> July | 15 <sup>th</sup> July      | 16 <sup>th</sup> July | 17 <sup>th</sup> July |
|-----------|-----------------------|-----------------------|--------------------------|-----------------------|----------------------------|-----------------------|-----------------------|
| Morning   | ECR                   | ECR                   | Joint ePIC/EICUG         | EICUG                 | ePIC Workfests             | ePIC Workfests        | ePIC Workfests        |
| Afternoon | ECR                   | ECR                   | Joint ePIC/EICUG         | ePIC Plenary          | Free Afternoon, Excursions | ePIC Workfests        | ePIC Plenary          |
| Evening   |                       | ECR Dinner (Free)     | Welcome Reception (Free) | Whisky Tasting (Paid) | Group Dinner (Paid)        |                       |                       |

Starts Jul 11, 2026, 8:00 AM  
Ends Jul 17, 2026, 9:55 PM  
Europe/London

Glasgow

# EIC UGM Debrief | Day 1 | UG, Project, and More



## Rachel's Talk

**The Path**

**Collaboration Discussions**

- Early science has been discussed since before the charge
- July 2024 - E.C. Aschenauer's talk, collaboration meeting (Luhoff) [link]
- Series of discussions, followed by focused early science/physics readiness workshops
- Sep 2024 - online workshop [link]
- Jan 2025 - collaboration meeting (Frascetti) [link]
- Apr 2025 - CFNS workshop (Stony Brook) [link]
- Jun 2025 - charge from ALDs
- Sep 2025 - Institute of Physics workshop (London) [link]

Discussions laid the foundation for an ESR shaped by the collaboration

**ESR Development**

- Editorial team formed (PACs plus Carlos and Charlotte)
- Reviewers identified
- PWG analyses/appendices progressed
- Development of ESR document
- Feb 2026 - v1 to reviewers
- Mar 2026 - University of Calabria/INFN Cosenza workshop [link]
- Apr 2026 - production campaign by S&C for ALD version
- End May 2026 - v2 to reviewers
- Jun 2026 - v2.1 to collaboration - [link]
- Jul 2026, v3 to spokespeople and CC chairs for final comments
- CC office, membership & publication committees & SPs worked on author list

Iterative process between reviewers, editors, PWGs, S&C, collaboration, theorists

**Submission and Next Steps**

- Jul 10th 2026 - v3.2 sent to ALDs for comments and feedback; v3.2 posted on zenodo [link]
- Next:
- Implement any final fixes, post on arXiv at end of Jul 2026
- Convert ESR into article for ePIC NIM A Special Issue (submission - end Oct 2026)
- Each PWG will publish a NIM A article, with more details on their results (and more)
- BSMEW paper will focus on full EIC capabilities
- Note: July S&C production campaign will be used for NIM A articles

Culmination of >1 year targeted effort by collaboration and a major milestone!

**ESR Structure**

Contents

1. Introduction
2. The NIM Science Pillar and the Physics Program
3. Early Physics Working at the EIC
4. Scientific Opportunities
5. Scientific Objectives and Physics Objectives
6. Scientific Objectives and Physics Objectives
7. Scientific Objectives and Physics Objectives
8. Scientific Objectives and Physics Objectives
9. Scientific Objectives and Physics Objectives
10. Scientific Objectives and Physics Objectives
11. Scientific Objectives and Physics Objectives
12. Scientific Objectives and Physics Objectives
13. Scientific Objectives and Physics Objectives
14. Scientific Objectives and Physics Objectives
15. Scientific Objectives and Physics Objectives
16. Scientific Objectives and Physics Objectives
17. Scientific Objectives and Physics Objectives
18. Scientific Objectives and Physics Objectives
19. Scientific Objectives and Physics Objectives
20. Scientific Objectives and Physics Objectives
21. Scientific Objectives and Physics Objectives
22. Scientific Objectives and Physics Objectives
23. Scientific Objectives and Physics Objectives
24. Scientific Objectives and Physics Objectives
25. Scientific Objectives and Physics Objectives
26. Scientific Objectives and Physics Objectives
27. Scientific Objectives and Physics Objectives
28. Scientific Objectives and Physics Objectives
29. Scientific Objectives and Physics Objectives
30. Scientific Objectives and Physics Objectives
31. Scientific Objectives and Physics Objectives
32. Scientific Objectives and Physics Objectives
33. Scientific Objectives and Physics Objectives
34. Scientific Objectives and Physics Objectives
35. Scientific Objectives and Physics Objectives
36. Scientific Objectives and Physics Objectives
37. Scientific Objectives and Physics Objectives
38. Scientific Objectives and Physics Objectives
39. Scientific Objectives and Physics Objectives
40. Scientific Objectives and Physics Objectives
41. Scientific Objectives and Physics Objectives
42. Scientific Objectives and Physics Objectives
43. Scientific Objectives and Physics Objectives
44. Scientific Objectives and Physics Objectives
45. Scientific Objectives and Physics Objectives
46. Scientific Objectives and Physics Objectives
47. Scientific Objectives and Physics Objectives
48. Scientific Objectives and Physics Objectives
49. Scientific Objectives and Physics Objectives
50. Scientific Objectives and Physics Objectives
51. Scientific Objectives and Physics Objectives
52. Scientific Objectives and Physics Objectives
53. Scientific Objectives and Physics Objectives
54. Scientific Objectives and Physics Objectives
55. Scientific Objectives and Physics Objectives
56. Scientific Objectives and Physics Objectives
57. Scientific Objectives and Physics Objectives
58. Scientific Objectives and Physics Objectives
59. Scientific Objectives and Physics Objectives
60. Scientific Objectives and Physics Objectives
61. Scientific Objectives and Physics Objectives
62. Scientific Objectives and Physics Objectives
63. Scientific Objectives and Physics Objectives
64. Scientific Objectives and Physics Objectives
65. Scientific Objectives and Physics Objectives
66. Scientific Objectives and Physics Objectives
67. Scientific Objectives and Physics Objectives
68. Scientific Objectives and Physics Objectives
69. Scientific Objectives and Physics Objectives
70. Scientific Objectives and Physics Objectives
71. Scientific Objectives and Physics Objectives
72. Scientific Objectives and Physics Objectives
73. Scientific Objectives and Physics Objectives
74. Scientific Objectives and Physics Objectives
75. Scientific Objectives and Physics Objectives
76. Scientific Objectives and Physics Objectives
77. Scientific Objectives and Physics Objectives
78. Scientific Objectives and Physics Objectives
79. Scientific Objectives and Physics Objectives
80. Scientific Objectives and Physics Objectives
81. Scientific Objectives and Physics Objectives
82. Scientific Objectives and Physics Objectives
83. Scientific Objectives and Physics Objectives
84. Scientific Objectives and Physics Objectives
85. Scientific Objectives and Physics Objectives
86. Scientific Objectives and Physics Objectives
87. Scientific Objectives and Physics Objectives
88. Scientific Objectives and Physics Objectives
89. Scientific Objectives and Physics Objectives
90. Scientific Objectives and Physics Objectives
91. Scientific Objectives and Physics Objectives
92. Scientific Objectives and Physics Objectives
93. Scientific Objectives and Physics Objectives
94. Scientific Objectives and Physics Objectives
95. Scientific Objectives and Physics Objectives
96. Scientific Objectives and Physics Objectives
97. Scientific Objectives and Physics Objectives
98. Scientific Objectives and Physics Objectives
99. Scientific Objectives and Physics Objectives
100. Scientific Objectives and Physics Objectives

Current cover for v3.2 on Zenodo - will be updated by BNL artistic team for arXiv upload

**Summary**

- ePIC Detector is stable and has been technically baselined since Spring 2024.
- Detector scope has been complete in the P6 resource-loaded schedule since Fall 2025.
- This allows us to use it as a tool, for example to find cost mitigations to work with our UK colleagues
- The risk register is regularly updated for the Detector
- This allowed us since February 2026 to also project Monte-Carlo based contingencies
- Two of the Detector-related CD-3A procurements have completed (PbWO4 crystals, Silicon Photomultipliers).
- All but one of the 60% Preliminary Design Reviews have been completed, and the first 90% Final Design Review for non-CD-3A/CD-3B scope has been completed.
- EIC Detector Cost-Weighted Design Maturity grew from ~65% at last RRB to ~75% now.
- The EIC Detector documentation is well advanced - see <https://eic.jlab.org/Detector>, but need ePIC's help to finalize the **Inspection and Test Plans** for the different components
- There is strong and broad support to keep the momentum of ePIC and its international character.
- Large component of Detector in planned CD-3C package (~33% of the scope).
- Project support to continue non-CD-3C scope Detector FY26 momentum into FY27.
- CERN and DOE are in their final stage to prepare the collaboration agreement and eventually sign; such an agreement will formally initiate cooperation on the EIC between DOE and CERN, with signatures aimed for early this summer

Electron-Ion Collider

Joint 2026 ePIC / EIC-UG Meeting, July 11<sup>th</sup> - 17<sup>th</sup>, 2026

Jim's Talk

**What the EIC can do**

**Generate DPI for data as it is acquired-**

Digital persistent identifier (DPI or digital PID) - A digital identifier that is globally unique, persistent, machine resolvable and processable, and has an associated metadata schema" (see an ORCID iD).

**Generate DataCards to store alongside the data as it is stored-**

Includes an overview and context, organization & file structure, data details, and methodological info Human and AI readable Published and unpublished datasets

see Laura Biven's talk at the recent JLab User's Organization Meeting: <https://indico.jlab.org/event/1000/>

## David's Talk

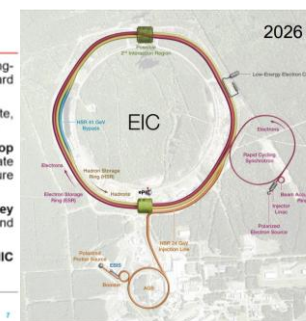
**Director's Review March 2026 - Key Messages**

- Strong technical progress across all subprojects** - Designs are maturing and long-lead procurements are generally proceeding well, indicating solid advancement toward project goals.
- The project cost estimate exceeds the \$3B cost cap** - The absence of a complete, resource-loaded schedule limits confidence in cost, schedule, and execution credibility.
- Completion of an integrated, resource-loaded preliminary baseline is the top priority** - This preliminary baseline is essential to support cost reduction efforts, validate schedule feasibility within annual funding constraints, assess risks, and support future Critical Decision approvals.
- Cost reductions must be systematically evaluated against impacts to Key Performance Parameters (KPPs) and mission need** - Cost, schedule, scope, and performance are tightly coupled and require disciplined trade-offs.
- Affordability depends in part on funding priorities following the conclusion of RHIC operations** - A combined operations and project funding plan.

Electron-Ion Collider

July 2026 Joint ePIC/UG Meeting  
J. Yeck

## Elke's Talk



## Sergei's Talk

**Summary**

**Value of a Second Detector**

- Broadens the EIC scientific reach
- IR-8 enables unique physics opportunities
- Complementary technologies reduce systematic uncertainties

**Potential**

- Advanced tracking, PID, timing, and calorimetry can exceed current performance
- Enables new measurements and expands the physics program

**Toward Realization**

- Roadmap for detector R&D, simulation, and implementation
- Synergies with EIC, FCC-ee, Belle II reduce risk and cost

**Take-Home Message**

A second detector is not redundancy. It **expands EIC physics reach and impact.**

Brookhaven National Laboratory

Chen-Ping Wang

## Ping's Talk

- Day 1 included updates from the UG, Project, Collider, PAC, Polarimetry, and D2
- Particularly noteworthy: ESR hit its goal and sent draft to ALDs!
- David also gave a talk discussing role AI might play in coming days – **My takeaway: data!**

# EIC UGM Debrief | Day 2 | UG Business and Priorities



## Pawel's Talk

### The EIC user group 2<sup>nd</sup> detector working group

- Formed in 2022 following DPAP and the establishment of the ePIC collaboration
- The current focus is on developing simulation tools reflecting the envisioned capabilities
- We aim for a short publication early next year and then starting the work on a longer white paper
  - Your input will be essential!
- We organize regular WG meetings. Please let us know if you have something you would like to share!
- Conveners
  - Anselm Vossen (Duke U) anselm.vossen at duke.edu (chair-elect of the EIC UG steering committee)
  - Björn Schenke (BNL) bschenke at bnl.gov
  - Charles Hyde (ODU) chhyde at odu.edu
  - Charlotte van Hulse (Vrije Universiteit) charlotte.barbara.van.hulse at cern.ch (also an EIC UG SC member)
  - Pawel Nadel-Turonski (U of SC) turonski at sc.edu
  - Simonetta Luti (UVA) sluti at virginia.edu
  - Vasily Morozov (ORNL) morozovs at ornl.gov
  - Wentiang "Blir" Li (MS State U) wentiang.li at msstate.edu

## Cristiano's Talk

### The AI4EIC WG

- AI/ML is becoming ubiquitous also in NP. AI is playing a key role in empowering data processing, analysis and enabling autonomous experimentation and control.

#### Artificial Intelligence

<https://www.ePIC.org/content/wg-ai>

The mission of the Artificial Intelligence (AI) Working Group is to develop and maintain connections to the data science community, and engaging with the rapidly evolving AI/ML (Machine Learning) toolset that may impact the realization of the EIC science mission. The AI will organize events to educate and assist the EIC community in utilizing AI/ML techniques in the area of detector design and controls, simulations, data readout and analysis, and theory and phenomenology. The AI will also serve as an [entry point to AI applications](#).

- The entry point, [ai4EIC.org](#), is structured in such a way to track all AI4EIC events (workshops, hackathons, tutorials, meetings). Projects and AI/ML software repositories are included in a resource-hub webpage. The website contains also a living review of AI-related papers for the EIC science and also features spotlights on impactful works.
- AI is a rapidly evolving field. AI4EIC acts as both a catalyst and an incubator for ideas, demonstrating how cutting-edge AI techniques can be applied to advance EIC science. E.g.,
  - How can generative AI contribute to the EIC science?
  - How can foundation models enable scalable AI solutions across EIC science workflows?
  - etc

## Sal's Talk

### New PWG convener nominees

We will propose a [new set of PWG convenors](#) at the upcoming CC meeting (more info at the C.C. meeting)

| INCLUSIVE                                                                           | SIDIS                                                                               | EDT                                                                                 | JETS + HF                                                                           | BSM + EW                                                                            |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| Tyler Kutz<br>Mainz                                                                 | Oleg Eysler<br>BNL                                                                  | Jan Vanek<br>U. of New Hampshire                                                    | Austin Baty<br>U. of Illinois<br>Chicago                                            | Jae Nam<br>BNL                                                                      |

### TC-Office priorities in 2026

- Completion of the background studies, ongoing** Needed as Detector contribution to a successful OPA review in September
  - Update/upgrade of preTDR including the results of the background studies
- Coordination of the NIM-A special issue Papers, DSC sector** Needed to disseminate ePIC achievements within the scientific Community consolidating the case of the EIC/ePIC project
- Status / perspectives / facilitating "full chain studies" from sensor to ECHELON 0**
- Dedicated Mechanics and Integration Workfest**

## Silvia's Talk

### preTDR Priorities and Progress for 2026

At our annual collaboration meetings at ANL in 2024, in Frascati in 2025, and at BNL in 2026, we defined the priorities for each year. At the 2026 meeting, we agreed on the following priorities.

- Production** Provide the simulation campaigns with background to finalize the ePIC detector design and validate its physics performance [✓](#), roll out Rucio as the default system for finding and accessing simulation data [✓](#), and automate production workflows [✓](#). Slides 17–24
- Reconstruction** Coordinate the effort to address gaps in reconstruction [✓](#). Work toward a holistic reconstruction approach, such as particle identification that integrates information from calorimeters, Cherenkov detectors, and time-of-flight systems. Slides 26–28
- Simulation** Implement and operate a workflow between detector and simulation experts to track the status of the comparison between the simulation design and the engineering design, and to resolve any discrepancies in a timely and systematic manner [✓](#). Slide 29
- Streaming Orchestration** Define and test the interface between DAQ and computing to mitigate risks in the integrated DAQ-computing system. As part of the integration, test develop and deliver a functional testbed that validates a workflow management system for the autonomous calibration of a detector subsystem. Slides 4–11
- Cross-cutting priority: Workforce** Foster a developer community within ePIC and support the careers of scientists focused on software & computing. Slides 30–32

## Markus's Talk

### The ePIC North Star: the Culture Code Statement of values

The ePIC Collaboration is a diverse international scientific community working collectively to design, construct, commission and operate the ePIC detector to exploit the physics potential of the Electron-Ion Collider. The success of the ePIC Collaboration relies on contributions from all members. Therefore, the ePIC Collaboration strives to provide a welcoming, accessible, safe, and supportive environment free from all forms of discrimination, harassment, and retaliation, where all collaborators representing various cultures and identities are fully included, respected and able to contribute their best work. Sustaining such a peaceful professional environment is the responsibility of all collaboration members.

Ref: ePIC Code of Conduct Policy, v2.1, July 2026, [link](#)

## Susanna, Francesco, Wouter's Talk

- Day 2 had more UG business: WG reports, awards

- Reports from Coordination Offices (emphasis on priorities)

- And discussions on MCEG efforts (c.f. [Frank's](#), [Andy's](#) talks)