BIC General Meeting, November 22, 2024

The ePIC Barrel Imaging Calorimeter

News and Management Update

Sylvester Joosten
Argonne National Laboratory
on behalf of the BIC DSC Management







News Brief

ePI

Reviews & Meetings

Reviews

- BIC Preliminary Design and Safety Review in September went very well
- ✔ EIC Director's Review in October saw reviewers raise concerns regarding the foundry for our "large" order of AstroPix
- Next: EIC CD3b OPA Review in January will help the Project prepare material, including slide(s) to address foundry concerns
- Full BIC PDR tentatively for Summer 2025

Meetings

- ePIC Collaboration Meeting in Frascati, Italy (January 20-24)
- (Tentative) April BIC Workshop at Argonne

TDR

- ✔ ePIC TDR v0 released in October
- ePIC TDR v1 changes due December 6

Activities

- Major PED activities started August 2024
 - GSFC still waiting for funding, reworking timeline to avoid delays
- International partners working toward substantial international in-kind funding
- Work package leads (Technical Managers) will report on status during monthly ePIC BIC General Meetings

ePIC Leadership

Spokesperson:

John Lajoje (ORNL ==)

Deputy Spokesperson and TC:

Silvia Dalla Torre (INFN Trieste III)

DSC Leadership

- Sylvester Joosten (Co-DSL, Argonne
- Hwidong Yoo (Co-DSL, Yonsei U !!) Maria Żurek (Deputy DSL, Argonne)

BIC DSC Board

Other Stakeholders

 Zisis Papandreou (U. Regina 11) Regina Caputo (NASA-GSFC)

BIC Project Manager

Jessica Metcalfe (Argonne

BIC Project Management

Project Manager (and DSTC):

 Jessica Metcalfe (Argonne **Deputy Project Manager**

Sylvester Joosten (Argonne)

Maria Żurek (Argonne ■)

Alexander Bazilevsky (BNL !!!)

EIC Project L3 CAM

L3 CAM for Electromagnetic Calorimetry:

ePIC Technical Coordination

Technical Coordinator:

- Silvia Dalla Torre (INFN Trieste III) **Deputy Technical Coordinators**
 - Prakhar Garg (Yale U.
 - Oskar Hartbrich (ORNL)
 - Matt Posik (Temple U.

AstroPix Wafers

Modules & Staves

TM: Manoj Jadhav (Argonne 5) Deputy TM: Sanghoon Lim (PNU 1811)

Module Design & Assembly **Chip Support**

PoC: Richard Levs Sites:

- KIT
- NASA-GSFC

Wafer Testing

PoC: Sanghoon Lim Sites:

- PNU 👀
- Argonne

Wafer Procurement

PoC: Jessica Metcalfe

Argonne

Sites:

• PNU 🔯

Glossarv

BIC: Barrel Imaging Calorimeter

- CAM: Control Account Manager
- DSC: Detector Subsystem Collaboration
- DSL: Detector Subsystem Lead **DSTC:** Detector Subsystem Technical Contact
- ESB: End-of-Sector Box
- ETC: End-of-Tray Card (AstroPix module RDO)
- FEB: Front-End Board PoC: Point-of-Contact
- PM: Project Manager
- QC: Quality Control
- RDO: Readout board
- TBC: To Be Confirmed TBD: To Be Determined
- TM: Technical Manager

PoC:

- · Manoj Jadhav · Anthony Affolder
- · Sanghoon Lim Sites:

- Argonne UCSC
- PNU 🐸

Stave Bus

PoC: Steven Welch Sites: Oklahoma State

Purdue Assembly & Install.

PoC:

Sites:

Sites:

Sites:

Argonne

PoC: Kevin Bailev

Argonne

PoC: Andreas Jung

CF Engineering

- · Kevin Bailey Dan Cacace
- Sites:
- Argonne
- BNL (EIC Project)
- ePIC BIC DSC

Mechanics

TM: Sylvester Joosten (Argonne ==) Deputy TM: Beomkyu Kim (SKKU 1881)

Sector Process Development Global Design PoC: Tom O'Connor PoC: Kevin Bailev Sites:

Argonne

Scintillating Fibers Tracker Mechanics

- PoC: Zisis Papandreou Sites:
 - U. Regina
 - Argonne

Sector Production

Sectors

- PoC: · Sylvester Joosten
- Beomkyu Kim Sites:
- Argonne SKKU
- · Yonsei U. 🔯

Sites:

· Wouter Deconinck

Sites:

- U. Regina 14
- · KNU 🔯

ESB **DAQ & Readout**

Sites:

Sites:

PoC: TBD

Sites:

TM: Zisis Papandreou (U. Regina 11) Deputy TM: Shinhyung Kim (KNU 1811)

SiPMs & Light Guides

- PoC: Zisis Papandreou Sites:
 - U. Regina M U. Alberta
 - KNU [8]

Electrical Design

- PoC: Aram Teymurazyan Sites:
- U. Regina 14

Cooling

- PoC: Wouter Deconinck
- U. Manitoba 🛂
- Argonne

- **ESB Production**

PoC:

- · Zisis Papandreou
- · Shinhyung Kim

- U. Manitoba
- Mt. Allison U.

System Testing

TM: Maria Żurek (Argonne) Deputy TM: Hwidong Yoo (Yonsei U. 1811)

System Demonstration PoC: Henry Klest

Beam Tests

Sites: Argonne

PoC: Bobae Kim

Argonne

Sites:

 U. Regina • PNU 🔯

SIPM FEB & DAQ Integration PoC: Norbert Novitzky

NASA-GSFC

ETC

PoC: Regina Caputo

- ORNL U. Regina
- U. Manitoba

Argonne

ORNL

• PNU 🔯

 U. Regina • EIC Korea 🐸 **Slow Controls**

System Calibrations

TBD

System QC

- PoC: Maria Żurek Sites. Argonne
- U. Regina 141 BNL (EIC Project)

Software & Sim

Benchmarks PoC: Maria Żurek Sites:

- Argonne U. Manitoba
- PNU 🔯

Simulation

- PoC: · Jeongsu Bok · Wouter Deconinck
- Sites: Argonne
- U. Manitoba 14 · U. Regina

• PNU 🔯

Reconstruction

- PoC: Minho Kim Sites: Argonne
- U. Manitoba
- PNU 🔯

Note: The BIC internal work packages (AstroPix Wafers, Modules & Staves, Mechanics, Sectors, ESB, DAQ & Readout, and System Testing) are integrated under the EIC Project P6 Work Packages

Argonne National Laboratory

NASA Goddard Space Flight Center

Oklahoma State University

University of Connecticut

University of California Santa Cruz











Canada

University of Manitoba University of Regina





Mount Allison University



NSERC



Canada Foundation for Innovation



Possible in-kind funds

Korea

Kyungpook **National** University







University of Seoul



Pusan **National** University



Korea University



Sungkyunkwan University











University of Giessen



ePIC BIC Detector **Subsystem Collaboration**

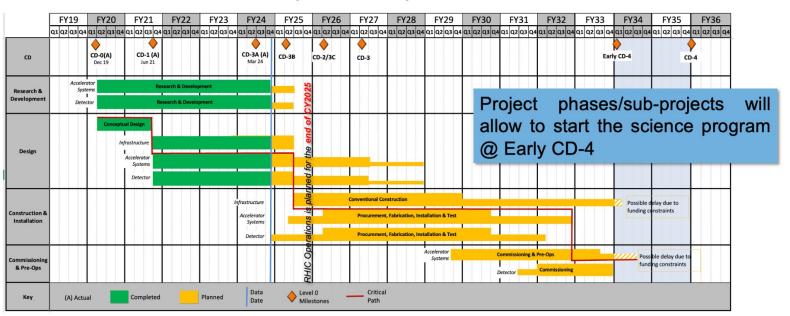
Germany

EIC Schedule



Schedule

Under finalization for CD-2; Mostly Technically Driven after FY2027.



Since CD-1, the critical path is on the Accelerator systems.

Toward pre-TDR v1.0

On track for v1.0 on December 1st

- On track to address most reviewer comments by December 1st
 - Some reviewer comments warrant discussion (see next slides)
- Created GitHub repository for analysis code of BIC TDR figures:
 - https://github.com/eic/epic-tdr-bic
 - This addresses the Guidelines for Reproducing TDR Plots (https://zenodo.org/records/14170704)
 - Will provide codes for most figures by December 1st
- Will reproduce most figures from the latest official campaign
 - Caveat: single particle samples for some studies not part of campaign, will address with production WG
- Have partial rough draft of supplemental material ready, will need iteration and expanding in the future



Guidelines for Reproducing TDR Plots

1 Procedure

We agreed to archive the information necessary for reproducing the studies and associated figures included in the TDR. After evaluating various options, we selected a method that simplifies the procedure with minimal additional steps. For reproducing the detector and physics studies, we will use GitHub repositories, subject to the following requirements:

- These repositories must be accessible to all members of the collaboration.
- Each figure in the TDR must include a direct link to its corresponding GitHub repository in the figure caption.
- Repositories must contain all scripts that begin with the primary data source to fully reproduce studies
 and figures. At least one Readme or a similar document should be provided, documenting the necessary
 steps for reproducing the studies and figures. For studies based on the ePIC simulation productions or
 geometry implementations, the scripts must use the centrally accessible data and geometry releases. If
 ancillary data are required, and they are not already accessible remotely, this data must be included
 in the reository.
- This approach may not be suitable for CAD drawings, Finite Element Analysis (FEA) studies, and other technical files. In these instances, the GitHub entry should include a description and contact information.

Additionally, the information necessary for reproducing the studies and figures will be copied into a dedicated repository to ensure archiving is consistent with major versions of the TDR.

Other Bussiness



- Working on more comprehensive BIC collaborator list, will contact institutional leads soon to get list of names.
- Any BIC-specific activities to be planned during the January collaboration meeting?'

Last BIC General Meeting of the year - thanks everyone for a very productive year where we made major progress toward our milestones!