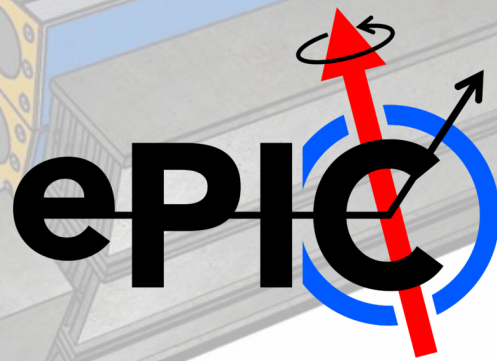


A detailed 3D cutaway diagram of the ePIC detector. The detector is a large, cylindrical structure with a complex internal layout. It features a central region with a green grid-like structure, surrounded by various layers of components, including a blue outer shell and a yellow inner shell. The diagram shows the intricate arrangement of the detector's components, including the central region, the inner shell, and the outer shell.

# ePIC Collaboration News

*J. Lajoie, S. Dalla Torre*

October 20, 2023



Hey John, start the recording....

# Today's (short) Agenda

- News from SP Office
- Announcements from Collab. Mtg. LOC
- News from the Project

**ePIC General Meeting**

Friday Oct 20, 2023, 10:30 AM → 12:30 PM US/Eastern

Description Connection Information: <https://iastate.zoom.us/j/5671810336?pwd=Q1pwM2Q5NFk0T2xqMlJiWDcwcXI0dz09>

Recording:

Time	Topic	Speakers	Duration
10:30 AM → 11:30 AM	General Status and Updates	Conveners: John Lajoie (Iowa State University), Silvia Dalla Torre (INFN, Trieste)	
10:30 AM	ePIC Collaboration News	Speakers: John Lajoie (Iowa State University), Silvia Dalla Torre (INFN, Trieste)	20m
10:50 AM	Jan 2024 Collaboration Mtg. LOC Announcements	Speaker: Maria Zurek (Argonne National Laboratory)	10m
11:00 AM	EIC Project News	Speakers: E. C. Aschenauer (BNL), Rolf Ent (Jefferson Lab)	20m
11:20 AM	Discussion	Speakers: John Lajoie (Iowa State University), Silvia Dalla Torre (INFN, Trieste)	10m

# Reviews, Reviews, Reviews...

- ~~■ July 5 + 6: Particle Identification Detectors Interim Design Review~~
- ~~■ July 21: Final Design Review of the PbWO4 Crystals for the ePIC Backward EM Calorimeter (LLP)~~
- ~~■ August 28 + 31: DAC Review of Detector R&D~~
- ~~■ August 29 + 30: ePIC Comprehensive Design Review by DAC~~
- ~~■ September 13: SciFi Applications Final Design Review (LLP)~~
- ~~■ September 14: SiPM Applications Final Design Review (LLP)~~
- ~~■ September 25: Final Design Review Forward HCAL W & Steel (LLP)~~
- October 5-6: Final Design Review of Magnet (MARCO)
- October 10-12: DOE CD-3A Director's Review
- October 19-20: ePIC Computing Model Review
- November 14-16: DOE CD-3A Independent Project Review
- December 7 + 8: 2<sup>nd</sup> Resource Review Board meeting @ Washington DC
- Dec/Jan (TBD): Preliminary Design Review of Far-Forward/Far-Backward Detectors

More information in Project News

Ongoing

# News from TIC (I)

- Oct. 9<sup>th</sup>: ZDC
- <https://indico.bnl.gov/event/20648/>
- *Goal: Review ZDC requirements and design*
  
- ZDC design parameters put in place prior to the Yellow Report
- Time is now for an exercise that optimizes physics capability for a given cost

## TIC meeting - ZDC

Monday Oct 9, 2023, 9:00 AM → 11:00 AM US/Eastern  
Silvia Dalla Torre (INFN, Trieste)

**Description** Technical and Integration Council Meeting

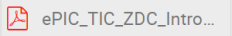
Join Zoom Meeting  
<https://cern.zoom.us/j/9374314394?pwd=YTFjZjFGcXptMG13cGFQYWwvZz09>

Recording:


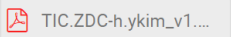
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**9:00 AM** → 9:05 AM **Communications**  
**Speaker:** Silvia Dalla Torre (INFN, Trieste)

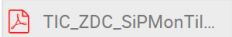
**9:05 AM** → 9:20 AM **ZDC - requirements**  
**Speaker:** Alexander Jentsch (Brookhaven National Laboratory)



**9:25 AM** → 9:50 AM **ZDC - the FOCAL-like approach**  
**Speakers:** Michael Murray (The University of Kansas (US)), Yuji Goto (RIKEN)

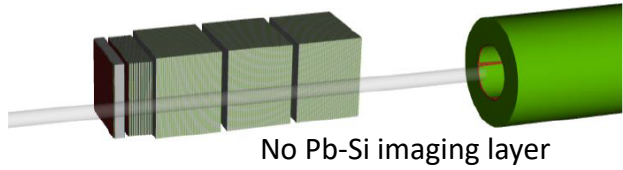
**9:55 AM** → 10:20 AM **ZDC - the SiPM-on-tile approach**  
**Speaker:** Miguel Arratia (University of California, Riverside)





# ZDC Design Options

Yuji Goto: Updated ZDC Design  
(Po-Ju Lin and Michael Pitt)

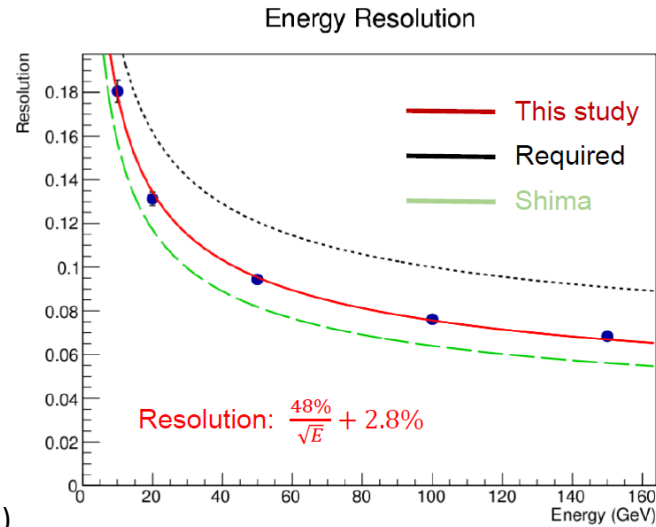


No Pb-Si imaging layer

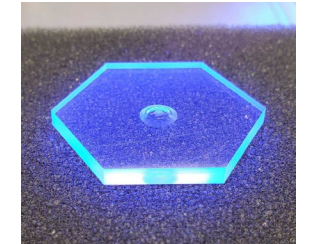
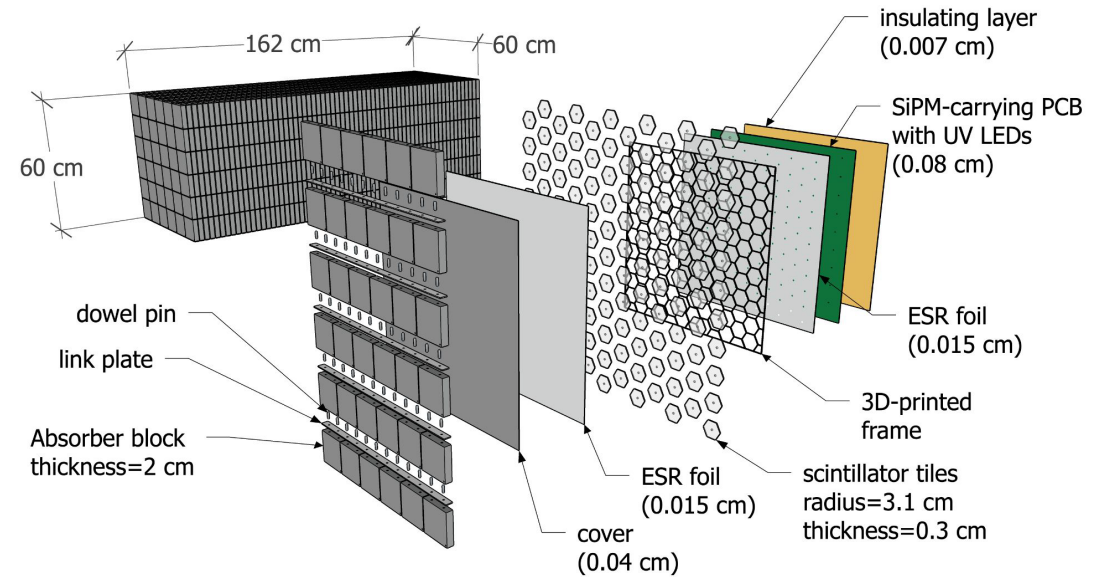
➤ Use only three Pb/Sci blocks to fit the dimension limitation

- Overall length approximately 182.7 cm
- Gaps between crystal-W/Si and W/Si-PbSci: 2 cm
- Gaps between Pb/Sci blocks: 5 cm
- In Pb/Sci: **Lead thickness = 10.0 mm, scintillator thickness = 2.5mm**

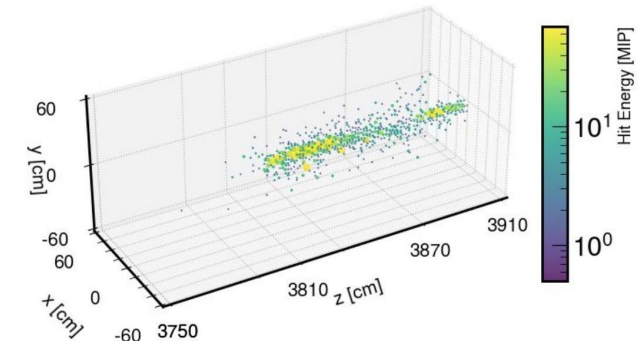
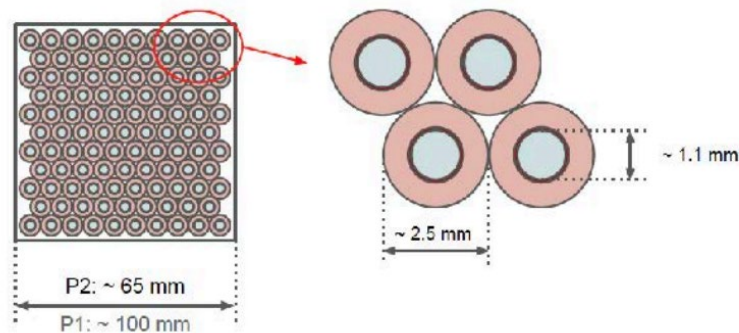
Slightly smaller crystal and W/Si sections (56 x 54 cm)  
PbW04 or LYSO options



Miguel Arratia



Yongsun Kim: Pb-(Sci+Silica) HCAL  
(capillary design DRO)



LYSO setup(PCB)

9

- Finish the design of PCB for the drilling hole and the relative position of the SiPM
- Send the design to CH, and checking the setup of cable, now.

Yu-Siang Xiao (NCUHEP, Taiwan)

# ZDC – TIC Findings

Summary from Acting TC, PTR and CC WG Conveners

- The requirements for the ZDC need to be summarized in a dedicated set of slides, extracting the existing information from recent published papers and from the YR.
  - NB: Alex Jentsch has agreed to do this.
- Concerning the hadron component of the ZDC, the "SiPM-on-tile" approach appears more mature and its performance for neutron detection better understood by simulation studies than the "FOCAL-like" approach, which still has multiple open design options.
- The "FOCAL-like" approach includes electromagnetic calorimeter components by the combined use of two technologies, which makes it complex. The "SiPM-on-tile" approach still needs to integrate an electromagnetic component.
- The SiPM-on-tile design will take advantage of re-use of the STAR absorber and economies of scale with the forward HCAL insert, but will still require additional workforce and groups to be responsible for construction, testing and commissioning.
- ePIC would largely profit of a joint effort of the proponents of the two approaches making use of the "SiPM-on-tile" option for the hadron calorimeter and complementing it with an electromagnetic component adequate to ePIC ZDC requirements.
- TIC will discuss again ZDC on a time scale of about a month to follow the progress in the design of the subsystem.

# News from TIC (II)

- Oct. 16<sup>th</sup>: Det. Description, Far Backward
- <https://indico.bnl.gov/event/20551/>
- *Goal: Coordinate update of detector geometry in simulations; Far backward status updates*

## TIC meeting - detector description in simulations; far backward

Monday Oct 16, 2023, 9:00 AM → 11:00 AM US/Eastern

Silvia Dalla Torre (INFN, Trieste)

**Description** Technical and Integration Council Meeting

Join Zoom Meeting

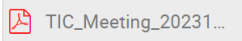
<https://cern.zoom.us/j/9374314394?pwd=YTFjZjFGcXptMG13cGFQYWwvZz09>

Recording:

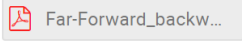
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**9:00 AM** → 9:05 AM **Communications**  
**Speaker:** Silvia Dalla Torre (INFN, Trieste)

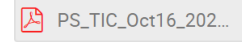
**9:05 AM** → 9:20 AM **Ongoing/planned work for updating the detector parameters in ePIC simulation**  
**Speaker:** Chao Peng (Argonne National Laboratory)



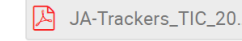
**9:25 AM** → 9:45 AM **Updates on far detectors**  
**Speaker:** Yulia Furletova (Jefferson Lab)



**9:50 AM** → 10:10 AM **Status and plans for the Luminosity detectors**  
**Speaker:** Dhevan Gangadharan (University of Houston)



**10:15 AM** → 10:35 AM **Status and plans of the Far Backward High Rate Tracker**  
**Speakers:** Jaroslav Adam, Jaroslav Adam (BNL)





# Detector Geometry Updates

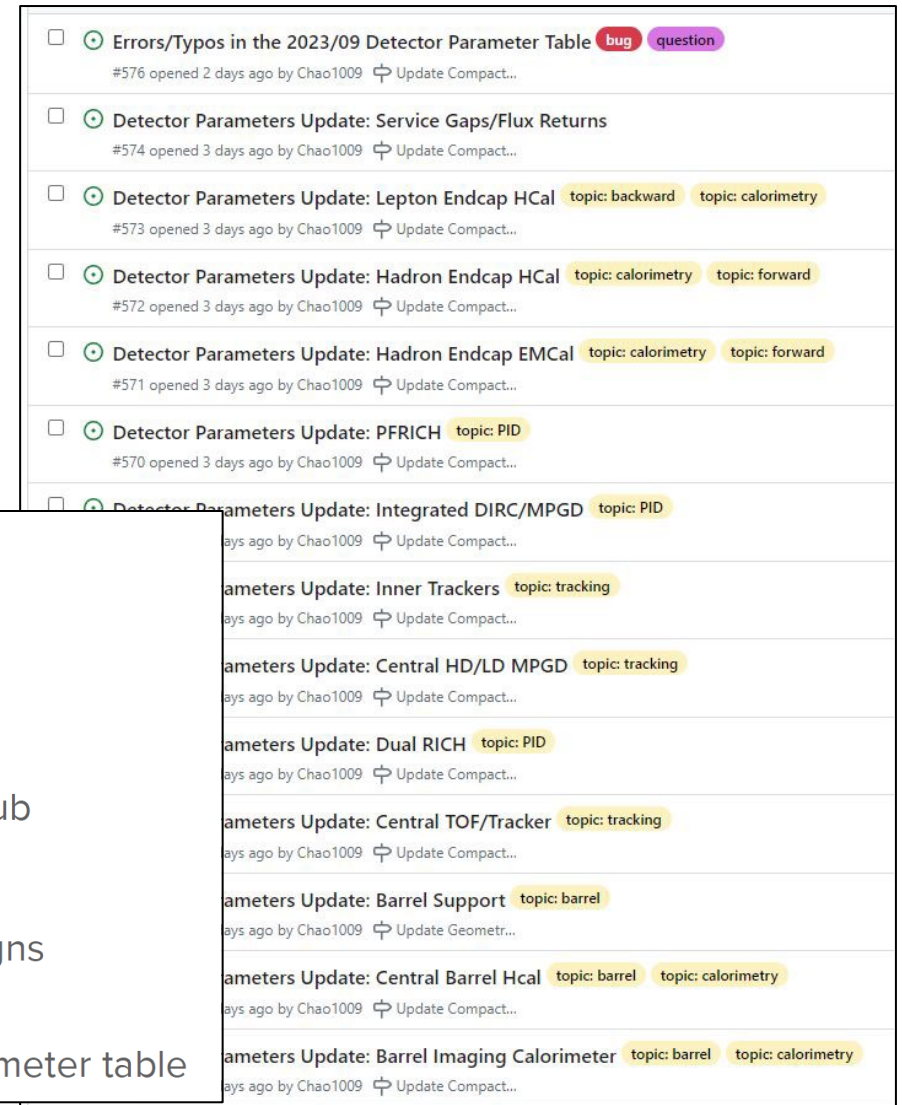
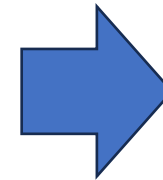
Chao Peng and Kolja Kauder

## Recent Release of the Geometry Parameters

- [New Detector Parameter Table](https://eic.jlab.org/Geometry/Detector/Detector-20230929162408.html) released 2023/09/27
  - Many updates compared to 2023/01 table
  - Need to implement them in the simulation (easier for frequent and smaller updates)
  - <https://eic.jlab.org/Geometry/Detector/Detector-20230929162408.html>



The screenshot shows a web browser window with the title "EIC GEOMETRY" and the date "FRI, 29 SEP 2023 16:24:08". The main heading is "EIC DETECTOR GEOMETRY INTERACTION POINT 6". Below the heading is a table with the following columns: Region, Component, Sub-Component, WBS, Length (cm), Inner Radius (cm), Outer Radius (cm), Offset from Center (cm), Physical Start (cm), Physical End (cm), Volume (m³), Weight (kg), Technology, and Notes.



The screenshot shows a list of GitHub issues. The issues are:

- Errors/Typos in the 2023/09 Detector Parameter Table (bug, question) #576 opened 2 days ago by Chao1009
- Detector Parameters Update: Service Gaps/Flux Returns #574 opened 3 days ago by Chao1009
- Detector Parameters Update: Lepton Endcap HCal (topic: backward, topic: calorimetry) #573 opened 3 days ago by Chao1009
- Detector Parameters Update: Hadron Endcap HCal (topic: calorimetry, topic: forward) #572 opened 3 days ago by Chao1009
- Detector Parameters Update: Hadron Endcap EMCal (topic: calorimetry, topic: forward) #571 opened 3 days ago by Chao1009
- Detector Parameters Update: PFRICH (topic: PID) #570 opened 3 days ago by Chao1009
- Detector Parameters Update: Integrated DIRC/MPGD (topic: PID) #569 opened 3 days ago by Chao1009
- Detector Parameters Update: Inner Trackers (topic: tracking) #568 opened 3 days ago by Chao1009
- Detector Parameters Update: Central HD/LD MPGD (topic: tracking) #567 opened 3 days ago by Chao1009
- Detector Parameters Update: Dual RICH (topic: PID) #566 opened 3 days ago by Chao1009
- Detector Parameters Update: Central TOF/Tracker (topic: tracking) #565 opened 3 days ago by Chao1009
- Detector Parameters Update: Barrel Support (topic: barrel) #564 opened 3 days ago by Chao1009
- Detector Parameters Update: Central Barrel Hcal (topic: barrel, topic: calorimetry) #563 opened 3 days ago by Chao1009
- Detector Parameters Update: Barrel Imaging Calorimeter (topic: barrel, topic: calorimetry) #562 opened 3 days ago by Chao1009

## What the Simulation WG Needs from DSC's

- Update the parameters for your own detector subsystem
  - Simulation team is willing to help
  - [Helpdesk](#) channel on mattermost, or tag us (Chao, Wouter, ...) on github
- Study and validate the parameter changes
  - Expect simulation output changes in the following simulation campaigns
  - Report issues/bugs
  - Simulation team is the messenger, we do not own the geometry parameter table

# Far Forward/Backward Updates

Talk from Yulia – need to select default configuration and update P6 before review

## ZDC

	CD1	Detector proposal 1	Detector proposal 2	ePIC
Dimensions	60x60x200cm <sup>3</sup>		60x60x200cm <sup>3</sup>	
VETO	no	1 layer Si	Si - LowG pads - 2 layers	Si -LG pads 56x54 cm <sup>2</sup>
EMCAL	PbWO4 with SiPMs 2x2x20 cm <sup>3</sup>	W/SciFi 2.5 × 2.5 cm towers, 17 cm long	HGCROC PbWO4 with APD 3x3x7cm <sup>3</sup> 20x20	PbWO4 (with APD) 56x54 cm <sup>2</sup> 2x2x7cm <sup>3</sup> 28x27 or LYSO ?
EMCAL- imaging	no	no	Si- LowG pads - 20 layers Si-HighG pads -3 layers W alloy 3.5mm - 22 layers	(56x54 cm <sup>2</sup> ) - 20 layers
HCAL -imaging	no	no	Si-LowG pads 12 layer , HGCROC Pb- 3.5cm -12 layers	no
HCAL	Pb/Sci Pb: 3cm 3 stations	Pb/Scintillator 120 layers of 1 cm Pb and 0.25 cm scintillator	Pb/Sci - 2 stations Pb- 3cm -15 layers Sci-10cmx10cmx2mm	Pb/Sci ? Or as Insert

See Yulia's talk for additional tables for the rest of the far-forward/far-backward detector systems.

Also: Nice updates from Dhevan and Jaroslav

# Next TIC Meeting....

- Monday, October 23<sup>rd</sup>: **Test Beam Needs and Simulation Thresholds**
- Each DSL is requested to bring 1-2 slides on:
  - Expected test beam needs:
    - Focus on 2024 in light of FTBF issues, but need a full picture
    - Bring as much detail as possible – detector config, goals, time, particle species, energy,...
  - Status of thresholds in simulations
    - Urgently needed for background estimate studies
    - See spreadsheet here - [digitization table](#)

# Pending Requests for Information!

- There are *multiple pending requests* for input from DSC's:



This information is needed to keep progress on the ePIC technical design moving forward!

Even if you need some time to develop the responses, connect with the requesters and let them know the status.

Lots of requests – easy to get lost in email!  
Will organize a “Pending Requests” page in the Wiki.

# Next Collaboration Meeting – Jan 2024

- Jan 9-13<sup>th</sup>, 2024 @ ANL
- Three days of parallel workfests followed by two days of plenary sessions:
  - <https://indico.bnl.gov/event/20473/>
- Requested workfest proposals from DSC/WG Leadership:
  - 11 proposals received!
  - Planning Meeting 10/13





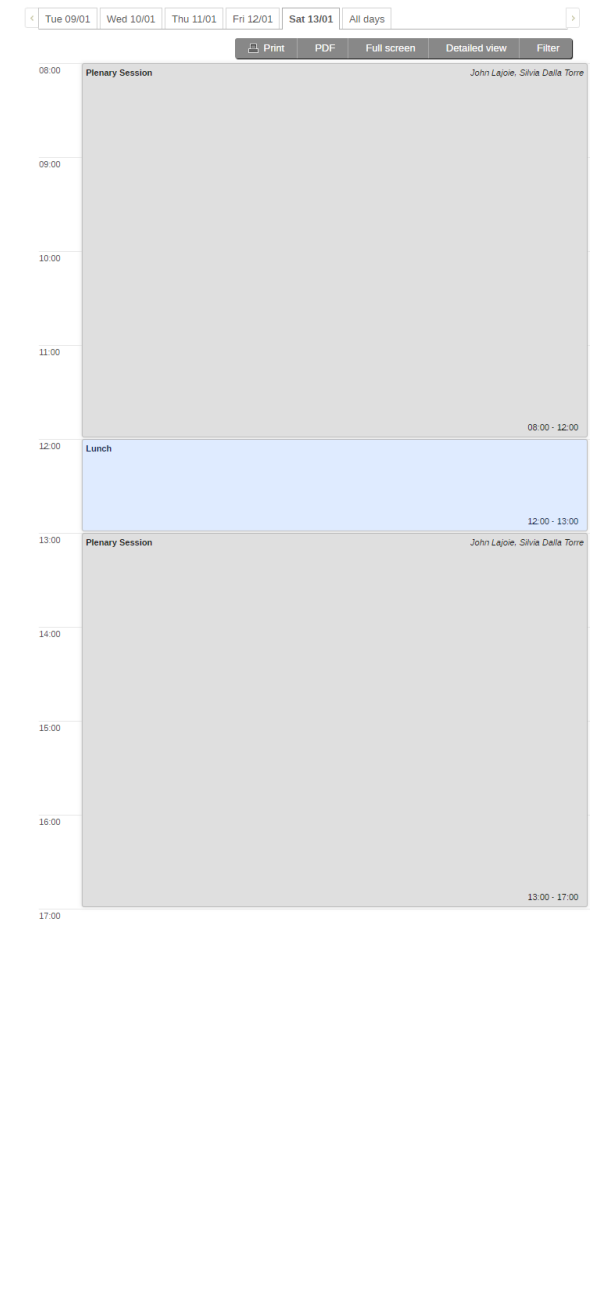
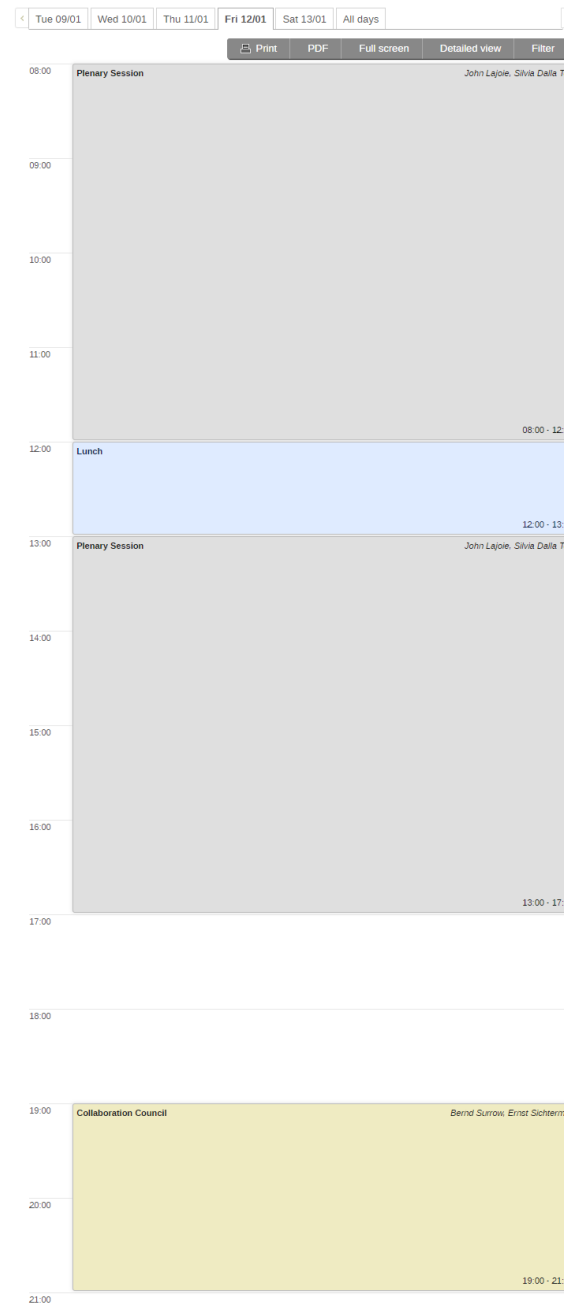
# Jan 2024 ePIC Meeting Workfests

Workshop Title	Organizers
Barrel ECAL DSC	Maria Zurek, Sylvester Joosten
SVT DSC	Laura Gonella, Ernst Sichtermann
Tracking	Ernst Sichtermann, Matt Posik
Jets & HF (Particle Flow)	Brian Page, Olga Evdokimov, Derek Anderson
Jets & HF (Vertex)	Brian Page, Olga Evdokimov, Shujie Li, Barak Schmookler
Streaming Computing Model / Electronics & DAQ	Fernando Barbosa, Jin Huang, Jeff Landgraf, Marco Battaglieri, Markus Diefenthaler
FFWD, FBKWD & Exclusive, Diffractive and Tagging, eA	Raphael Dupre, Rachel Montgomery, Alex Jentsch, Kong Tu, Simon Gardner, Nathaly Santiesteban, Dhevan Gangadharan, Nick Zachariou
Backgrounds	Kolja Kauder, Elke-Caroline Aschenauer, Shujie Li, Barak Schmookler
AC-LGAD DSC	Alessandro Tricoli, Alex Jentcsh, Wei Li, Zhenyu Ye
Common PID	Thomas Ullrich, Oskar Hartbrich
Software & Sim TDR Readiness	Markus Diefenthaler, Sylvester Joosten, Wouter Deconinck, Torre Wenaus



# Plenary Sessions

- Plenary sessions all-day Friday-Saturday (12<sup>th</sup> and 13<sup>th</sup>)
  - Full agenda in the next month
  - Expect it will be very full!
- CC Meeting Friday evening
- Plan to end late afternoon on Saturday the 13<sup>th</sup>



# Next Collaboration Meeting – Jan 2024

- Workfest organizers to complete detailed agendas:
  - These are a real opportunity for a concentrated push on key issues in ePIC
  - We strongly encourage collaborators to send new postdocs, students to attend in-person
- Registration available early November
  - Please register early to help the LOC with ANL access
- More info from Marzia Zurek
- Make your travel plans now!



# EICUG Letter

- The EICUG is soliciting signatures on a letter of support for EIC funding.
  - Letter is linked in today's Indico
- Didn't receive an email?
  - Contact Marco (marco.radici0@gmail.com) and include a non .gov/.org email address

October XX, 2023

The Honorable Jennifer Granholm  
Secretary of Energy  
United States Department of Energy  
1000 Independence Avenue SW  
Washington, DC 20585

The Honorable Shalanda D. Young  
Director  
Office of Management and Budget  
725 17th Street NW  
Washington, DC 20503

Dear Secretary Granholm and Director Young:

As members of the Electron-Ion Collider User Group (EICUG), a diverse community of more than 1400 physicists from 95 laboratories and universities across 34 U.S. states, and over 184 international institutions, we write to you today to express our strong support for the Department of Energy's (DOE) Electron Ion Collider (EIC) project and urge you to provide increased funding in the FY25 DOE budget request to support its construction consistent with the project plan.

As we noted in our letter last year, **the world-leading, one-of-a-kind EIC will maintain America's leadership and competitiveness in nuclear, accelerator, detector, and computing science** — areas that are essential to economic advancement, national security, and technological development — for decades to come. The EICUG strongly supports the recently released 2023 Long Range Plan for Nuclear Science, A

Dear EIC Users,

We are writing to share with you a letter, addressed to the Secretary of Energy and Director of the Office of Management and Budget, asking for increased funding in the FY25 US budget request to support the construction of the EIC consistent with project planning. We cannot stress enough how important it is for the community to show their commitment to the EIC project. If you would like to support this initiative and sign the letter please provide your name and affiliation at the link below.

<https://forms.gle/4ik4LWvuyt9gBEg49> [urldefense.com]

Thank you for your time and thank you for supporting the EIC!

Best Regards,

Marco Radici, Chair  
Or Hen, Chair-elect  
Renee Fatemi, Past Chair

of the EIC as the **highest priority** the first collider of its kind to be gy developments at EIC will have

continued leadership and support well know, stable and sustained ion's innovation ecosystem, and That said, **our primary concern** **remains insufficient, risking both**

imately \$2 billion in cost savings der (RHIC) and its tunnel for the **unstable and dedicated** funding the only operating collider in the and ensure that the EIC project mission to keep the staff critical to ation of the new facility.

d for such an optimally smooth and most efficient construction community remains grateful for provided to the EIC project, it was needed.



# LRP Communication to Congress

- Effort to reach out and communicate about the LRP to congress.
- Personal communication with your representative is important!
- Note registration deadline is today!

Dear Colleagues:

As you know we are organizing a day on the hill when we communicate about the LRP to congresspeople and staffers. That day is Nov. 8. *Please* consider joining this effort by traveling to Washington DC. This event will help us increase the impact of the LRP by communicating to the decision makers about the opportunities and priorities articulated in our plan. We are encouraging everyone in the community to participate.

A background briefing will be provided in advance of the November meetings. The government affairs team will oversee scheduling and organizing the meetings with your representatives. Registration for this important federal advocacy effort can be found here: <https://forms.gle/iFVn5FWvmt7t6Pkk8> *Please register by Oct. 20 at the latest*, so that we can organize all the relevant meetings.

Strong participation from our community is vital to increase the impact of the LRP. Please note that this will not be a lobbying activity. Rather you will be informing Congress about the outstanding science opportunities in our field as well as our impact on the nation through workforce development and applications. Please do not hesitate to reach out with any questions.

Thank you!  
Gail Dodge  
NSAC Chair

# Upcoming General Meeting Schedule

- Regularly scheduled general meetings every two weeks, in rotation:
  - Nov 2<sup>nd</sup> @ 7:30PM ET
  - Nov 17<sup>th</sup> @ 10:30AM ET (Immediately following CD-3A review)
  - Nov 30<sup>th</sup> @ 7:30PM ET
  - Dec 15<sup>th</sup> @ 10:30AM ET
- CC Meetings will be called by the CC Chair as needed:
  - Next CC Meeting Oct 27<sup>th</sup> @ 10:30AM ET
  - CC Meeting @ Jan. Collaboration Meeting (evening ET Dec. 1<sup>st</sup>)

# Summary

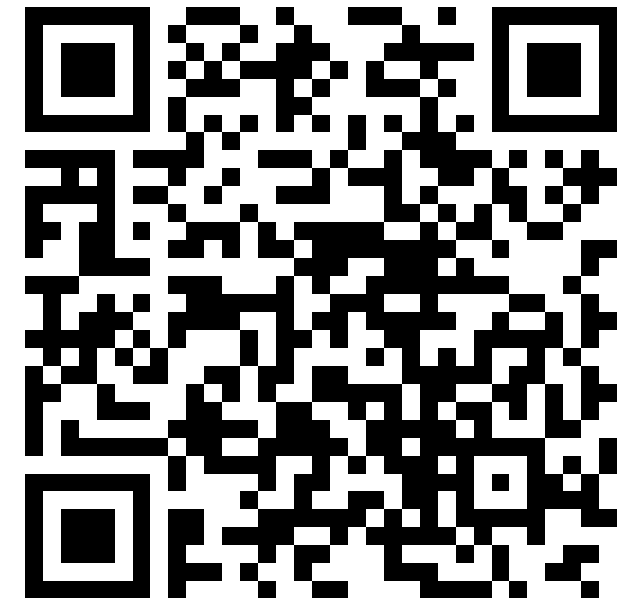
- The ePIC Collaboration and the EIC Project are continuing to make progress on CD milestones and the development of the ePIC technical design.
- BUT... there is a lot more to do!
  - Continue to improve communication with DSC's (and between DSC's and CAMs, etc.)
  - ... (it's a long list)
- Start planning NOW to attend the Jan 2024 Collaboration Meeting!
  - This is a great opportunity to get new people involved!
  - Reach out to your friends and colleagues not already in ePIC!
  - Contact workfest organizers if you want to contribute to the agenda



# ePIC Resources – Get Connected!

- Mailing Lists – <https://lists.bnl.gov/mailman/listinfo>
- Indico Agenda - <https://indico.bnl.gov/category/402/>
- Wiki - <https://wiki.bnl.gov/EPIC>
- ePIC Software Training:
  - <https://eic.github.io/tutorial-setting-up-environment/>
  - <https://eic.github.io/tutorial-geometry-development-using-dd4hep/>
  - <https://eic.github.io/tutorial-simulations-using-ddsim-and-geant4/>
  - <https://eic.github.io/tutorial-jana2/>
  - Recordings: <https://www.youtube.com/@eicusergroup1532>

QR code for Mattermost channels:





# EICUG Membership

- The EICUG is a vital organization to promote the interests of the EIC community!
  - Without the EICUG we would never have gotten far enough to form ePIC!
- Please register your institution!
- Check with your EICUG IB representative to get registered as a member
- <https://www.eicug.org/content/join.html>

