

# ePIC Backwards RICH Review process

https://indico.bnl.gov/event/18499/

## GD/I Backwards RICH Review

Mar 20 – 21, 2023  
US/Eastern timezone

### Overview

### Timetable

### My Conference

### My Contributions

### Background Material

Zoom information for open sessions is the usual GD/I meeting link:

Zoom connection: <https://bnl.zoomgov.com/j/1612787551?pwd=VzBZYVpsMGM3TnpMRHl2K1puOFd5Zz09>

Meeting ID: 161 278 7551

Passcode: 707179

One tap mobile

+16692545252,,1612787551#,,,,\*707179# US (San Jose)

+16468287666,,1612787551#,,,,\*707179# US (New York)

## ZOOM Recording

### Day-1 (open access)

[https://bnl.zoomgov.com/rec/share/25M0ladfZXX1z\\_N3ZJ7yObQ0XzWH6zUuM0i-FSnlDnN3u1JJsJekJNOIKHqw4Kkt.KGu610214QPt1ORO?startTime=1679307692000](https://bnl.zoomgov.com/rec/share/25M0ladfZXX1z_N3ZJ7yObQ0XzWH6zUuM0i-FSnlDnN3u1JJsJekJNOIKHqw4Kkt.KGu610214QPt1ORO?startTime=1679307692000)

Passcode: @k6T\*%WK

### Day-2 (including costing, ask GDI for password)

[https://bnl.zoomgov.com/rec/share/ZN5qqtZnr4J\\_imSgqJBP6lmyjqTmlu7CCbKZegCRxFuRRyTk-s8osQhpLECCi3nC.KaCDF7nrBZS776xa?startTime=1679392294000](https://bnl.zoomgov.com/rec/share/ZN5qqtZnr4J_imSgqJBP6lmyjqTmlu7CCbKZegCRxFuRRyTk-s8osQhpLECCi3nC.KaCDF7nrBZS776xa?startTime=1679392294000)

Committee report: [https://indico.bnl.gov/event/18499/attachments/46114/79362/ePIC\\_bRICH\\_Report.pdf](https://indico.bnl.gov/event/18499/attachments/46114/79362/ePIC_bRICH_Report.pdf)

# ePIC Backwards RICH Review process

## ePIC Timeline for GD/I Review Decisions

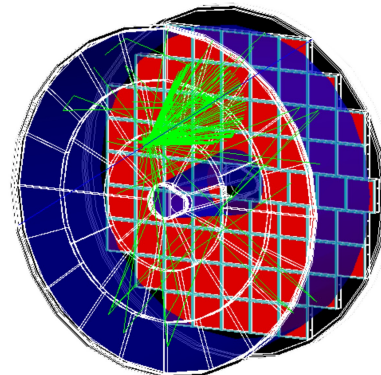
- March 13-14<sup>th</sup> – BECAL review (COMPLETED)
- March 20-21<sup>st</sup> – Backwards PID review (COMPLETED)
- March 24<sup>th</sup> – Target date for BECAL written report
  - Report will go to the proponents for fact-checking before release
- March 24<sup>th</sup> – CC Meeting
  - Endorse management plan, coordinator teams
  - Voting open for one week (March 31<sup>st</sup>)
- March 31<sup>st</sup> – Target date for Backwards PID written report
  - Again, will need to go to the proponents for fact-checking before release
- March 27-31<sup>st</sup> – DIS/Hard Probes/Travel to RRB
- April 3<sup>rd</sup>-4<sup>th</sup> – RRB meeting at BNL
- April 7<sup>th</sup> – First meeting of proto-EB to discuss recommendations
  - Only a partial EB at this point
- April 14<sup>th</sup> - General Meeting:
  - Announce recommendations from the SP Office based on review reports and EB discussion
  - Update on formation of DSC's
  - Project update, RRB meeting, etc.
- On or about April 21<sup>st</sup> – CC Meeting
  - Request to endorse SP recommendations for BECAL and Backwards PID
  - Full agenda of additional CC business



# What are the next steps?

- pfRICH CDR v1.1 should be out today
- All other studies, improvements, etc become “work in progress”, but also refinements towards a (JINST?) publication
  - EmCal case with the up-to-date crystal geometry
  - Time of Flight for low momentum K/p separation
  - Jet substructure PID resolution
  - HRPPDs in magnetic field -> final plots
  - Planacon MCP-PMT case, and other risk mitigation strategies
- Software porting to ePIC framework
- Wait for April 21<sup>st</sup>
- (Proceed with shaping up the DSSC, etc)

A Proximity-Focusing RICH for the ePIC  
Experiment  
– Conceptual Design Report –  
(Draft 1.1)



Babak Azmoun<sup>1</sup>, Deb Sankar Bhattacharya<sup>2</sup>, Daniel Cacace<sup>1</sup>, Helen Caines<sup>3</sup>, Chandradoy Chatterjee<sup>2</sup>, Jaydeep Datta<sup>4</sup>, Abhay Deshpande<sup>5</sup>, Christopher Dilks<sup>5,6</sup>, James Dunlop<sup>1</sup>, Alex Eslinger<sup>9</sup>, Prakhar Garg<sup>4,3</sup>, Tom Hemmick<sup>4</sup>, Alexander Jentsch<sup>1</sup>, Alexander Kiselev<sup>\*1</sup>, Henry Klest<sup>4</sup>, Samo Korpar<sup>7</sup>, Peter Krizan<sup>7</sup>, Jeffery Landgraf<sup>1</sup>, Saverio Minutoli<sup>8</sup>, Charles-Joseph Naim<sup>1</sup>, Mikhail Osipenko<sup>8</sup>, Brian Page<sup>\*1</sup>, Sanghwa Park<sup>9</sup>, Matt Posik<sup>10</sup>, Rok Pestotnik<sup>7</sup>, Andrej Seljak<sup>7</sup>, Prashanth Shanmuganathan<sup>1</sup>, Nikolai Smirnov<sup>3</sup>, Bernd Surrow<sup>10</sup>, Makoto Tabata<sup>11</sup>, Silvia Dalla Torre<sup>2</sup>, Zhoudunming Tu<sup>\*1</sup>, Thomas Ullrich<sup>\*1,3</sup>, Jan Vanek<sup>1</sup>, Anselm Vossen<sup>5,6</sup>, Craig Woody<sup>1</sup>, and Zhengqiao Zhang<sup>1</sup>

<sup>1</sup>Brookhaven National Laboratory, Upton, New York 11973, USA

<sup>2</sup>INFN, Sezione di Trieste, Trieste, Italy<sup>1</sup>

<sup>3</sup>Yale University, New Haven, Connecticut 06520, USA

<sup>4</sup>Stony Brook University, Stony Brook, New York 11794, USA

<sup>5</sup>Duke University, Durham, North Carolina 27708, USA

<sup>6</sup>Jefferson Lab, Newport News, Virginia 23606, USA<sup>1</sup>

<sup>7</sup>Ljubljana University and J. Stefan Institute, Ljubljana, Slovenia<sup>8</sup>

<sup>8</sup>INFN, Sezione di Genova, Genova, Italy

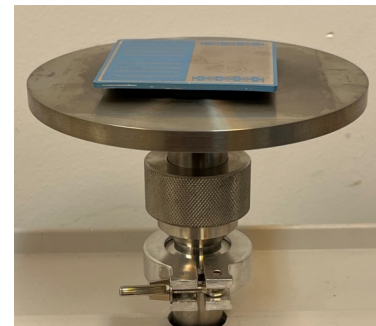
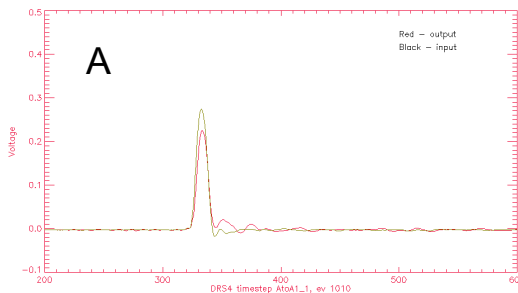
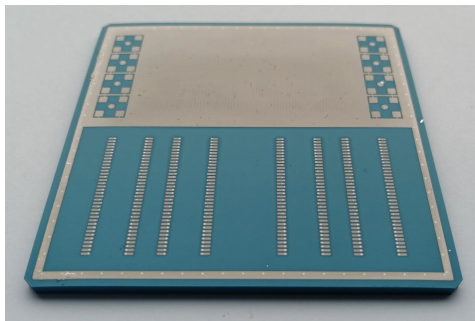
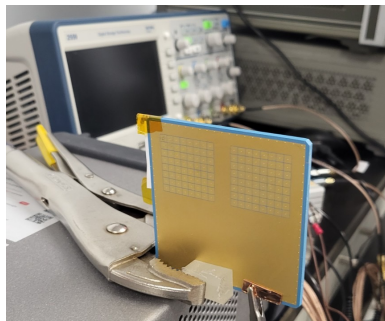
<sup>9</sup>Mississippi State University, Mississippi State, Mississippi 39762, USA

<sup>10</sup>Temple University, Philadelphia, Pennsylvania 19122, USA

<sup>11</sup>Chiba University, Chiba, Japan<sup>4</sup>

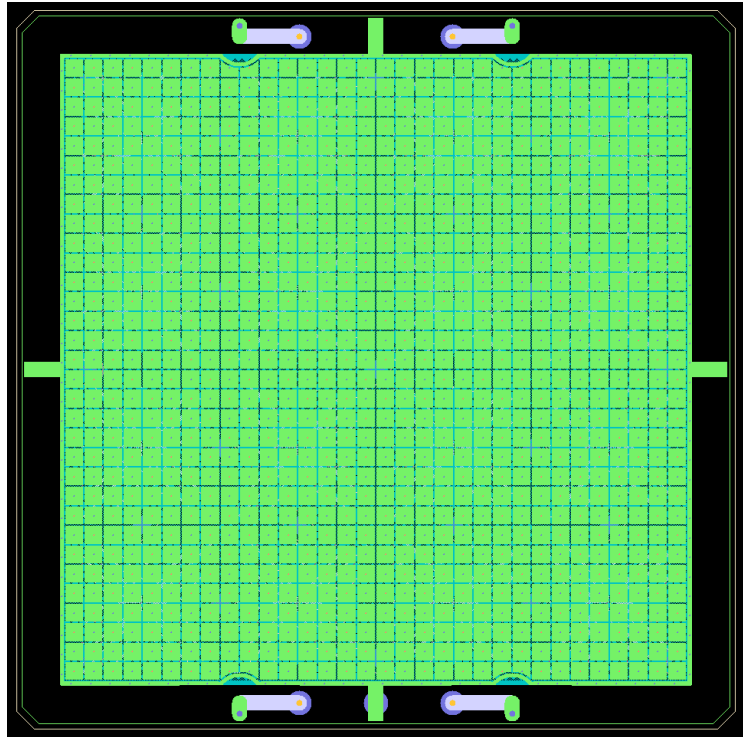
# News from the HRPPD re-design front

- First two 3" multi-layer ceramic anode plates by Techtra were examined at Incom
  - Flatness is tolerable on a 3.0mm thick plate, less so on a 2.5mm thick one
  - Vacuum tightness of the 3.0 mm plate confirmed
  - No cross-talk introduced in the ceramic stack
  - Certain signal degradation observed on long (5 cm) traces
  - Trace capacitance is unexpectedly high

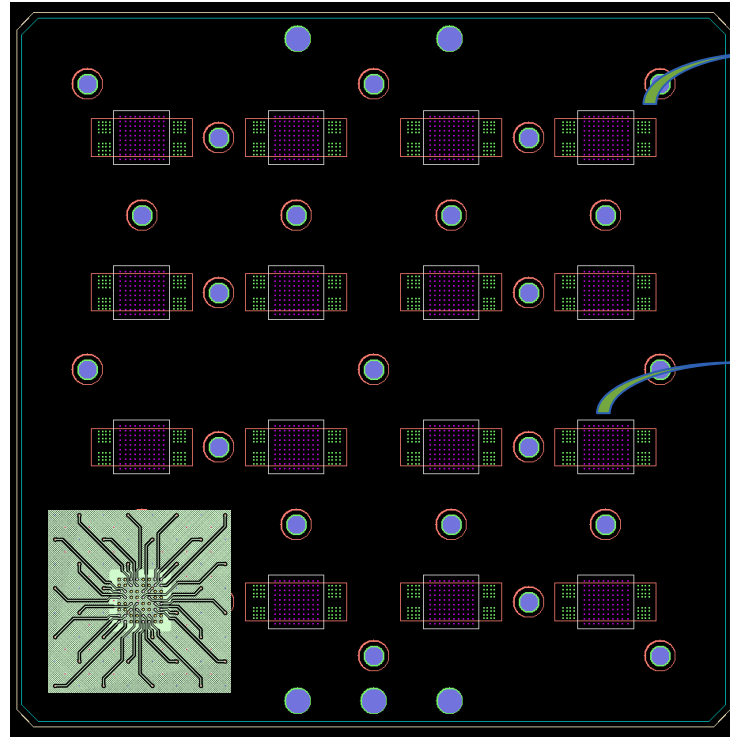


- Full size (120mm) anode plate with 1024 pads will be built and shipped to Incom by May
- A matching readout board with a “simple connectivity” will be built on the same timescale
- Assume that this design will be compatible with either 16x HGCROC (perhaps as early as beam test in spring 2024) or 4x EICROC (final) ASIC configuration

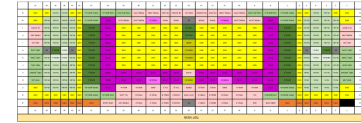
# News from the HRPPD re-design front



Inner side of a 32x32 pad ceramic base plate



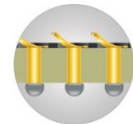
Outer side overlaid with a 16x HGCROC PCB template



HGCROC ASIC



Samtec interposer



Solder Ball Option



BeCu Compression Contacts

# Other news

- eRD110 meeting earlier this week: <https://indico.bnl.gov/event/18954/>
- LAPPD Workshop #3 in ~2 weeks from now