



# EIC<sup>2</sup>

EIC Center at Jefferson Lab

Douglas W. Higinbotham

# Jefferson Lab EIC Center Fellowship Program

Fellowships are awarded for a period of one year to fund EIC related research, including innovations to maximize scientific output of the EIC and studies to expedite both scientific and experimental readiness for EIC operations. The areas of research include theory, simulations, detectors, and computing.

Each graduate fellowship provides the awardee's home institution with a \$13,000 stipend and for postdoctoral fellows \$36,000 will be provided. **Post COVID fellows will be expected to again spend half their time at Jefferson Lab.**

The applications will be evaluated by a committee according to the following criteria:

- Merit and quality of proposed research
- Relevance of the proposed research to the Electron-Ion Collider and Jefferson Lab
- Likelihood that the proposed research can be successfully accomplished within the fellowship period.
- Letters of recommendation.

See web site for details: <https://www.eiccenter.org/jefferson-lab-eic-center-fellowships>

## Electron Ion Collider Center Fellowship Program

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- Currently 3 Postdoc and 3 Graduate student EIC Fellows
  - Funding provided by the Commonwealth of Virginia via SURA/JSA
  - Fellows are typically expected to spend half their time at JLab
- Similar number of fellows expected for FY22.
- Members of the Selection Committee
  - Prof. Abhay Deshpande (Stony Brook/Head of CFNS)
  - Dr. Douglas Higinbotham (JLab/Head of EIC Center)
  - Dr. David Lawrence (JLab/Information Technology)
  - Dr. Thia Keppel (JLab/Associate Director Experimental Nuclear Physics)
  - Dr. Jianwei Qiu (JLab/Nuclear Theory)
  - Dr. Todd Satogata (JLab/Accelerator Physics)

## Postdoctoral Research Fellows



**Salina Ali**

**University of Virginia**

Assist with construction of a prototype micro-RWELL, a new micro-pattern gaseous detector technology that could be ideal for the EIC, and to conduct parasitic tests of the detector's performance at JLab.



**Alexander 'Sasha' Bylinkin**

**University of Kansas**

Optimization of the proton and photon detectors in the EIC far forward regions and further development of the physics case for these systems.



**Francesco Celiberto**

**European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT\*)**

Twist-two calculations for extracting transverse momentum distributions and study of phenomenological applications of the research to spin-dependent observables.

NO FOOTER

## Graduate Student Fellows



**Christine Ploen**

**Old Dominion University**

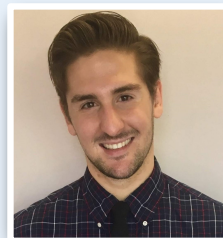
Background reduction in the EIC detector beamline by first characterizing the expected background caused by synchrotron photons and then evaluating mitigation schemes.



**Jackson Pybus**

**Massachusetts Institute of Technology**

Studies of tagged semi-inclusive deep inelastic scattering from polarized helium-3 nuclei and determination of the requirements of the far-forward detectors for these measurements.



**Richard Trotta**

**Catholic University of America**

Optimization of the second far forward EIC beamline for the extraction of pion and kaon structure functions.



EIC Center Fellows (both the previous cohort and the new cohort ) working on next workshop.

## 2nd Annual 2022 EIC UG Meeting Early Career Workshop

July 25-26, 2022  
Warsaw, Poland

We are pleased to announce the 2nd Annual 2022 EIC UG Meeting Early Career workshop. This event, dedicated to students and postdocs but open to everyone, will be held on July 25-26, 2022, the Monday and Tuesday before the annual EIC User Group meeting.

Aims of the workshop:

- Increase the visibility of EIC-related contributions from students and postdocs.
- Offer a platform to students and postdocs to connect and exchange knowledge.
- Provide a venue to present and discuss EIC physics, detector, and accelerator science ahead of the User group meeting.

Jefferson Lab

Brookhaven  
National Laboratory

Center for Frontiers  
in Nuclear Science

EIC<sup>2</sup>

<https://indico.jlab.org/event/485/>

## EIC Center Also Facilitates Detector Testing Jefferson Lab

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- Most detector tests at Jefferson Lab are done parasitically and **without a fee**.
- Most detector tests are done simply by placing the the detector near a fixed target. (i.e. instead of a beam through a detector, detectors are illuminated by radiation from a beam-target interaction). [many spots in the exp. halls where this can be done]
- We have a nice location in Hall D where pair produced electrons and positrons have been used for several EIC detector tests.
- We also have a new low energy electron facility, up to 10 MeV and 10 uA, where dedicated detector testing and irradiation can be done.
- I will give a quick overview of the JLab facility and show a few example detector tests and irradiations that have been done.
- Though EIC is in our name, we of course happy to help facilitate parasitic detector testing for other nuclear physics and/or high energy experiments.



# Thomas Jefferson National Accelerator Facility

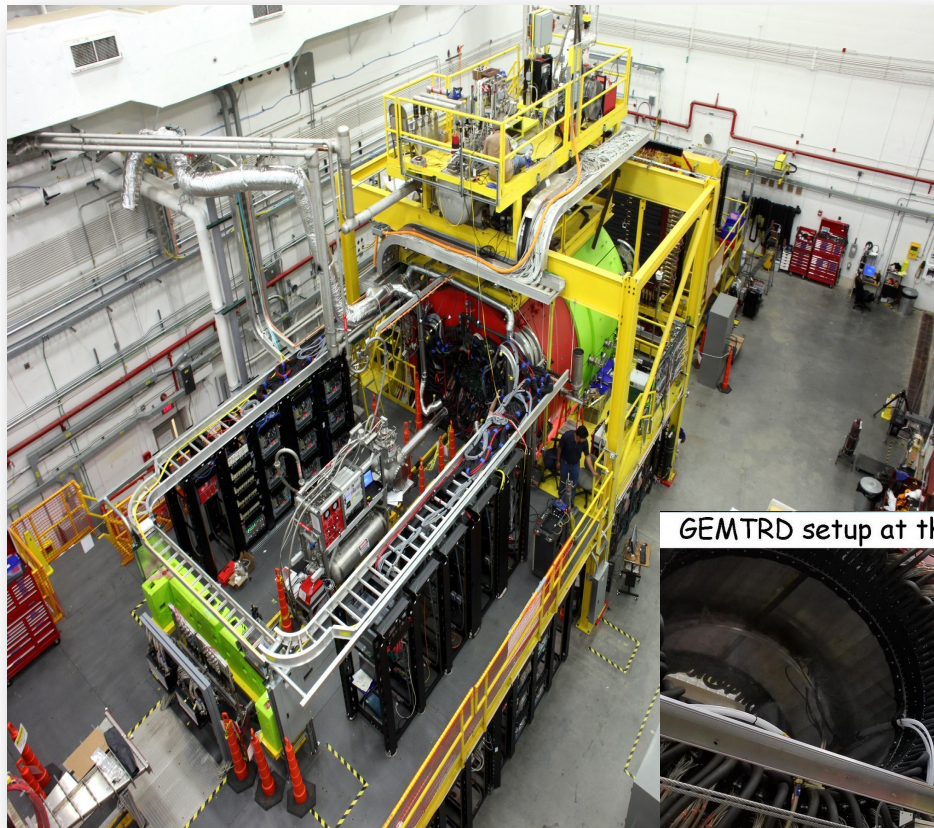


The 12GeV CEBAF can deliver different passes and different currents to exp. areas.

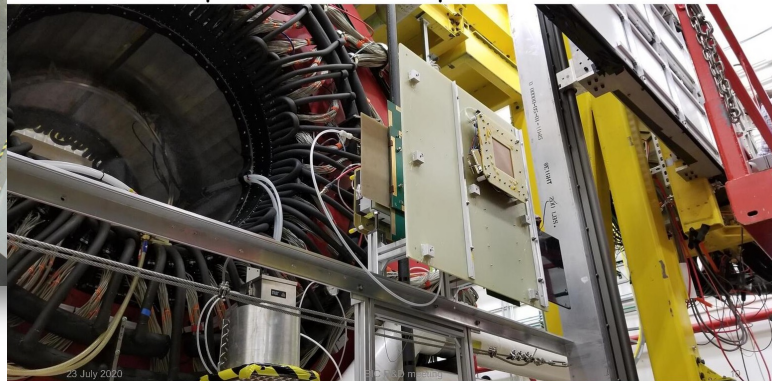
<https://www.jlab.org/physics/experiments/schedule>



# Jefferson Lab's Experimental Hall D

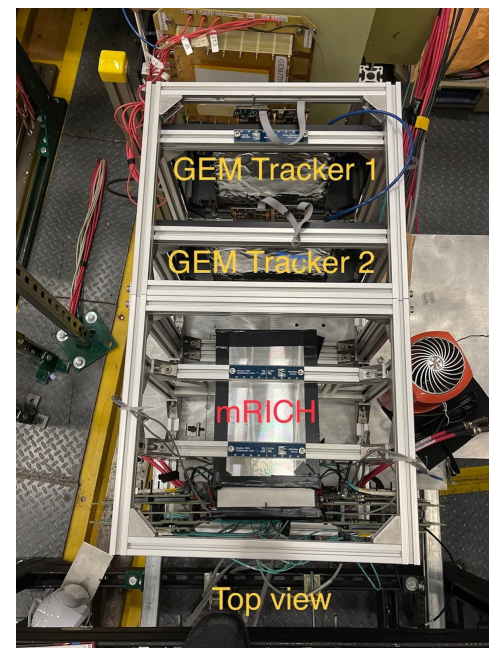
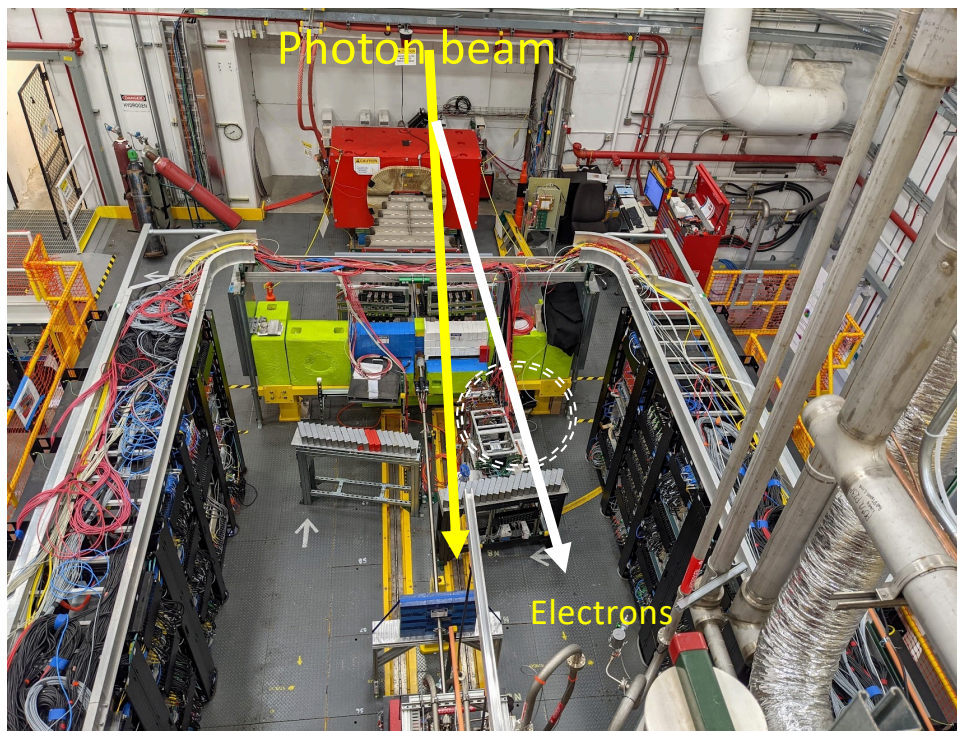


GEMTRD setup at the GlueX experiment



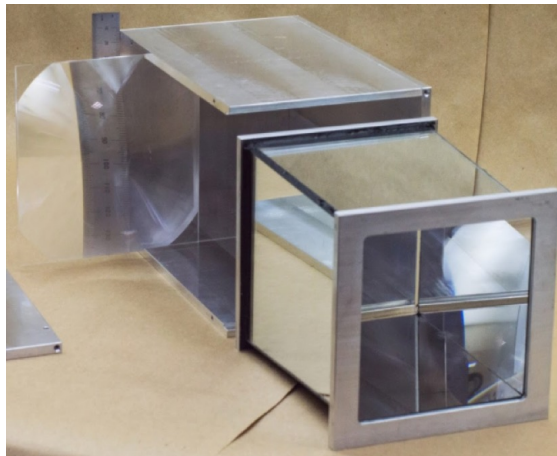
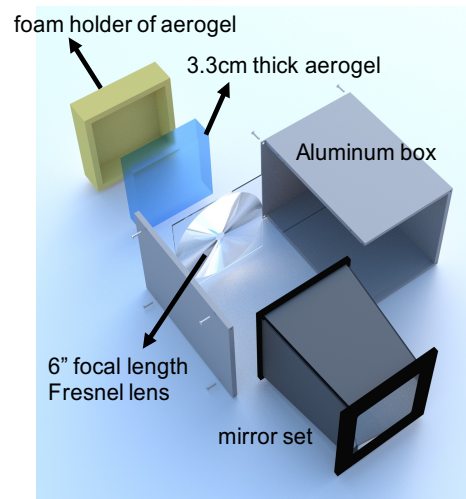
Location of EIC eRD22 tests of the GEM based transition radiation detector/tracker.

## Recent 2021 modular RICH Test in Hall D for the EIC

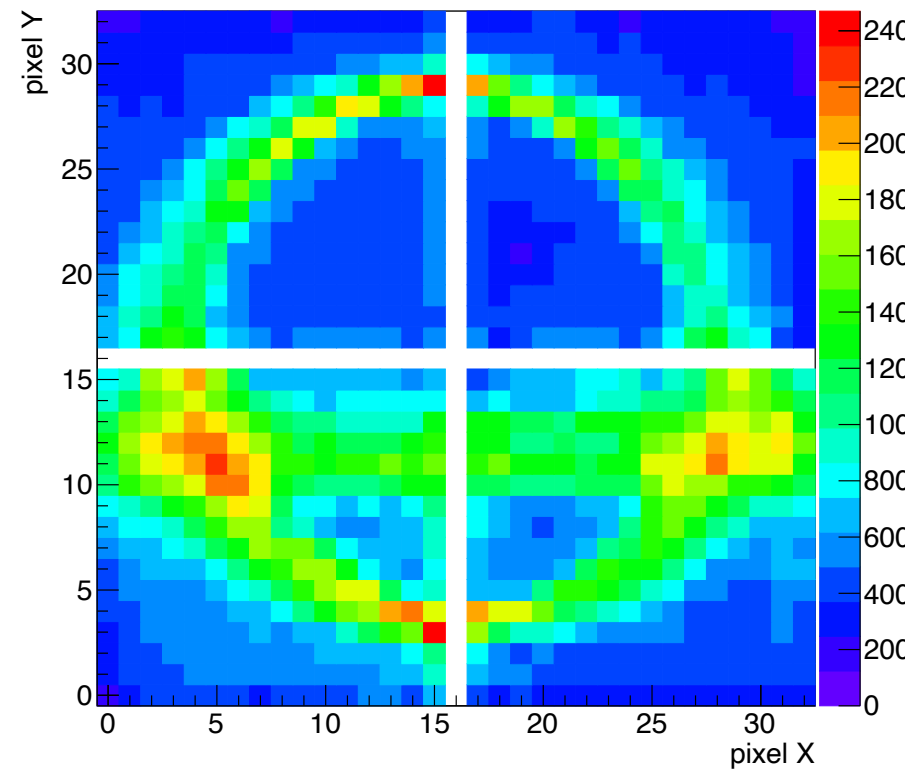




# Preliminary Results of Successful mRICH Test in Hall D

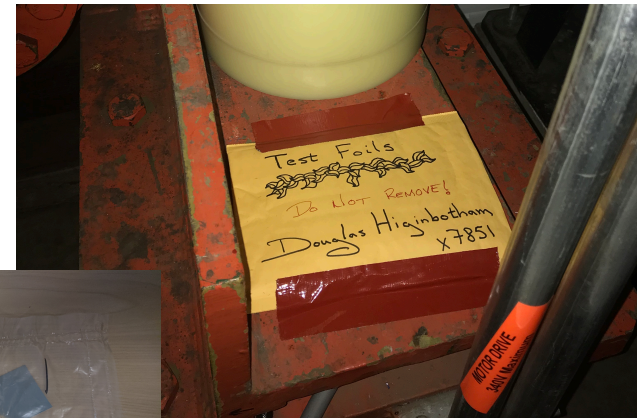
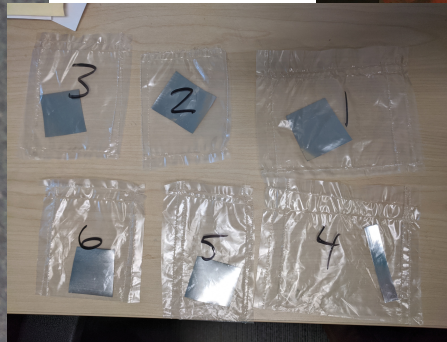


Run1935(190.0 < TDC < 230.0) and (55.0 < Tduration < 70.0)



## Materials Testing In High Radiation Environment

- 0.1 MRad dose to 3D printed plastics & alloy foils
- Done in close collaboration with JLab radiation control group



Foils just placed on HRS near target by RadCon.

Access and RadCon support is limited.



# Summary

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- Jefferson Lab EIC Center created to help the JLab user community get involved in the EIC, leveraging the physics overlaps and synergies between the Jefferson Lab science program and the EIC science program.
- The center also help groups with parasitic testing
  - Presently Four Parasitic Testing Areas On Site
    - High Luminosity Tests: Hall A and Hall C
    - Low Luminosity Tests: Hall B and Hall D
  - Presently One Area For Dedicated Testing
    - 10 MeV Upgraded Injector Test Facility
  - Testing does require approval by hall leader and work coordinator as well as appropriate training and safety documentation.
- More details about the fellowships and testing at:
  - <https://www.eiccenter.org/detector-testing>
  - <https://www.eiccenter.org/jefferson-lab-eic-center-fellowships>
- **The center also hosts visitors to JLab and we look forward to working closely with Inter-American Network of Networks of QCD Challenges**
- Please feel free to email me with questions: [doug@jlab.org](mailto:doug@jlab.org)