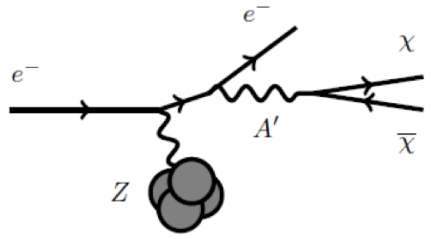
Collaborative NSF-MRI Grants with Primarily Undergraduate Institutions

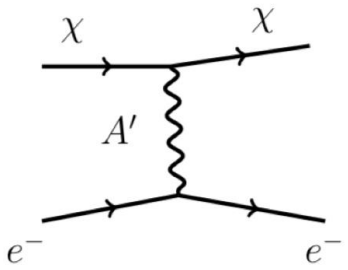
Dr. Michael Wood

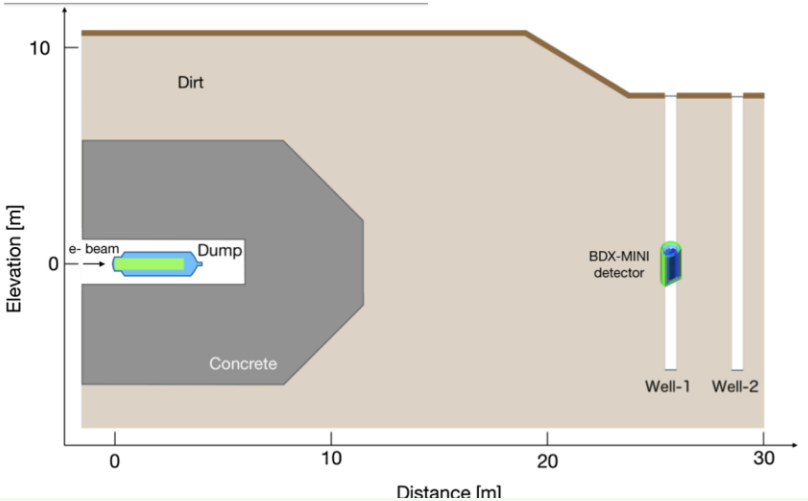
Canisius University

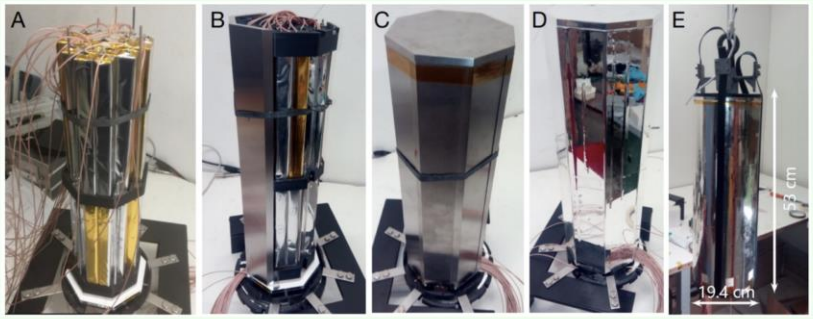
BDX – Search for Dark Matter

- My interest with BDX has been the search for light mass dark matter
- Member of the BDX @ JLab group
- Involved with the BDX-mini experiment
- Collaborated with Occidental College, Lamar University, and RMD Inc. to investigate Gd-loaded plastic scintillators for neutron detection
- Sent 3 students to INFN-Genova as part of INFN-DOE summer exchange







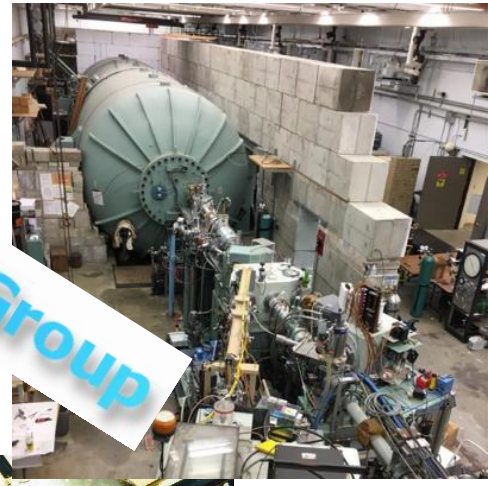


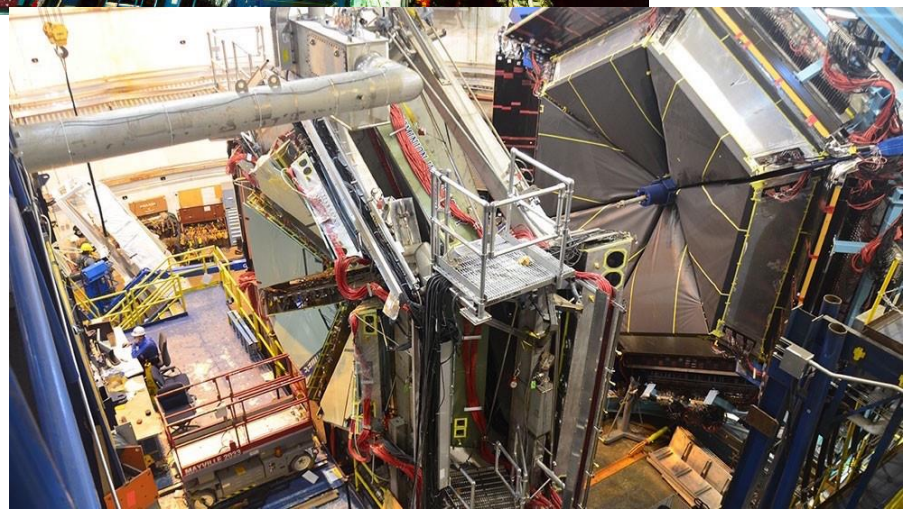
CANISIUS UNIVERSITY

A Little about Myself

- Started in low-energy nuclear physics
- 25 years in the CLAS Collaboration in Hall B
  - 7 years as a term member
  - 18 years as a full member
- My research background is interactions in the nuclear medium
  - Search for medium modifications of the vector mesons
  - Hadronization of the proton and the ω meson.

Triangle Universities Nuclear Laboratory
Few-Body Group





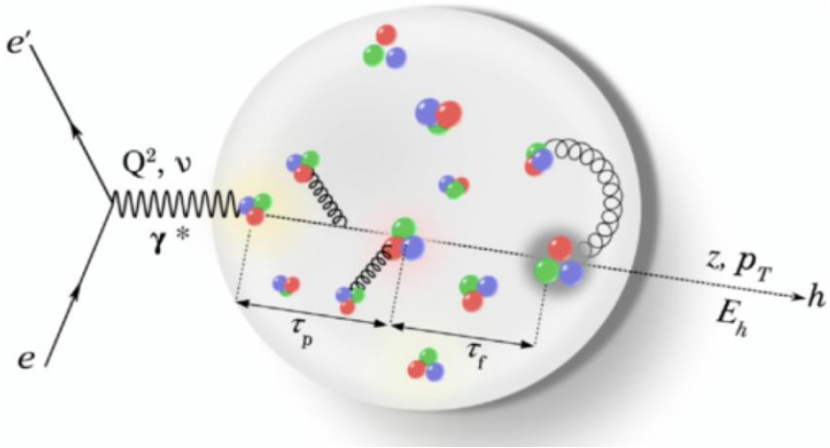
CANISIUS

Canisius University

- A private, Catholic university in Buffalo, NY (2nd largest city in NY).
- Founded by German Jesuits in 1870.
- One of 27 Jesuit colleges and universities in US.
- Student population (~2,500) with ~1700 undergraduates.
- Regional institution:
  - 81% NY resident
  - 13% out-of-state
  - 6% international

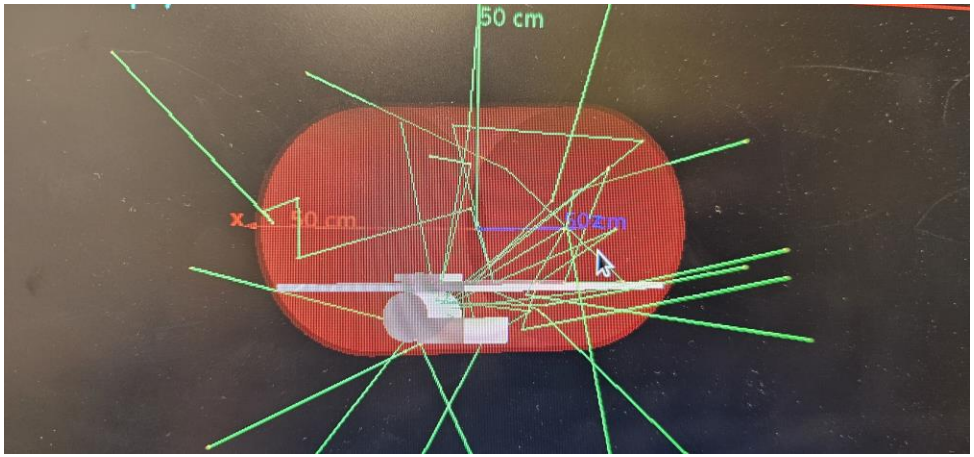
Research at a Primarily Undergraduate Institution

Over the past 18 years that I have been at Canisius University, I have supervised students in research.



For the most part, the research has involved computations, data analysis, and simulations.

- Data mining CLAS6
- Access to the JLab farm
- Containers like Docker and Singularity
- Open Science Grid

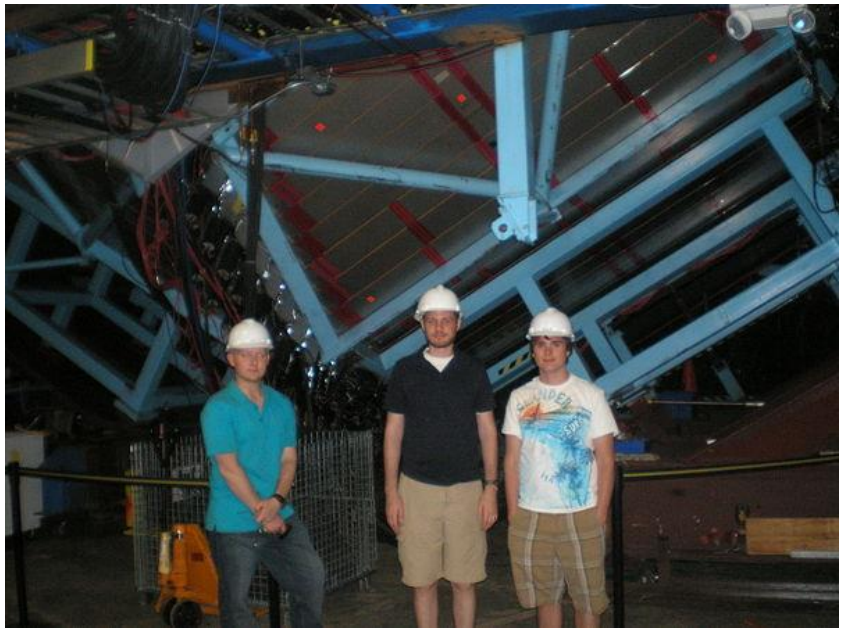


Research at a Primarily Undergraduate Institution

A research experience at a PUI is what makes the institution unique.

Undergraduate students at a PUI can get involved in research in their first summer. REU's and SULI's typically accept students after their 3rd year.

Undergraduate research is as much about learning as it is outcomes.



Funding Opportunities for PUIs

I have been fortunate to be funded to support my students

- Research Corp. 2010-2011 ($42,500)
- NSF 2015-2017 ($105,000)
- DOE SBIR 2022-2023 ($12,777)
- DOE
  - 2019-2021 ($100,000)
  - 2021-2024 ($175,000)
  - 2024-2027 ($272,000)

For a PUI, $100,000 can go a long way in terms of stipend, student stipend, travel, and computers.

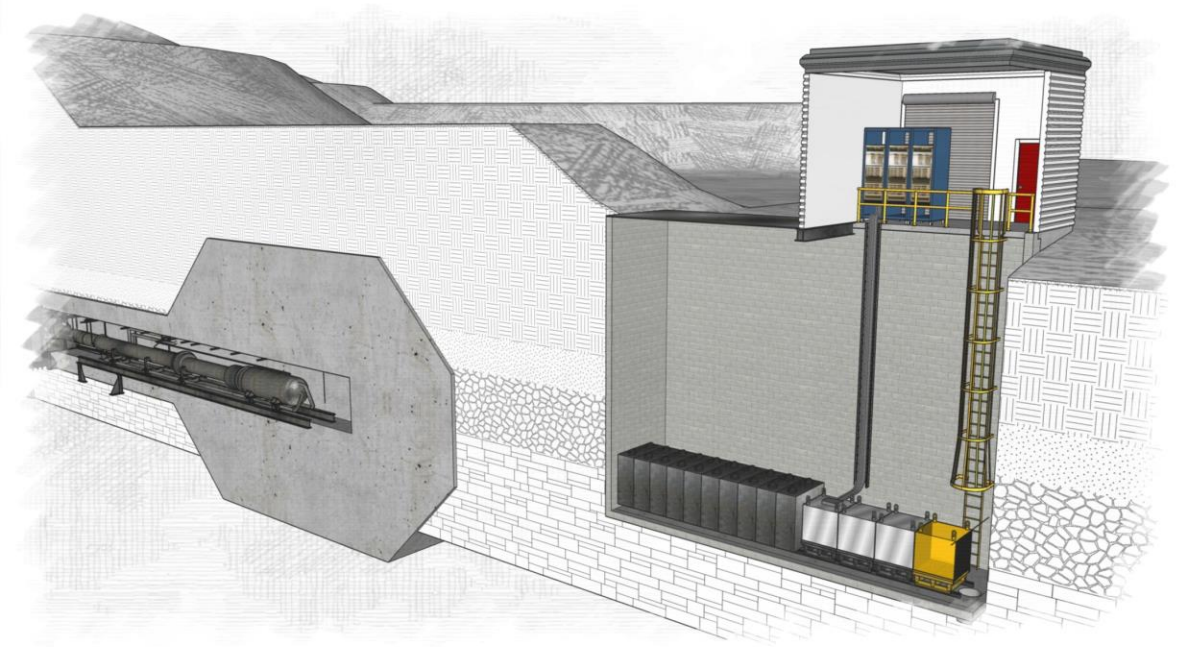
Undergraduate Involvement at BDX

Undergraduate students can make a positive impact to the development and installation of a new JLab facility.

- Detector component testing
- Computer programming
- Commissioning

Undergraduates will make their most impact during the summer for 8-10 weeks.

During the academic semesters, typically can only devote 5-10 hours per week.



NSF Major Research Instrumentation Grant

The Major Research Instrumentation (MRI) Program serves to increase access to multi-user scientific and engineering instrumentation for research and research training in our Nation's institutions of higher education and not-for-profit scientific/engineering research organizations.

- Track 1: Track 1 MRI proposals are those that request funds from NSF greater than $100,000 and less than $1,400,000.
- Track 2: Track 2 MRI proposals are those that request funds from NSF greater than or equal to $1,400,000 up to and including $4,000,00.
- Track 3: related to equipment that conserves helium.

NSF plans for ¼ of MRI funding goes toward track 2 proposals.

Limit on number of proposals per organization
0 - two in Track 1, one in Track 2 and one in Track 3

CANISIUS

Collaborative Funding

There is strength in numbers.

- A collaborative proposal is one in which investigators from two or more organizations wish to collaborate on a unified research project
- Two types:
  - Subaward - as a single proposal, in which a single award is being requested (with subawards administered by the lead organization)
  - Simultaneous submissions - simultaneous submission of proposals from different organizations, with each organization requesting a separate award

Need to organize the collaborative funding where one institution, preferably a R1, takes the lead.

Changes to NSF-MRI for FY2026

At the BDX & Beyond call, the deadline was November 11, 2026.

<u>In July, the following message was posted on the NSF website</u>

On July 1, 2025, the U.S. National Science Foundation announced that it will not accept new proposals for the NSF Major Research Instrumentation (MRI) Program during the previously scheduled FY 2026 submission window (October 15 – November 14, 2025). Any proposals submitted during this period will be returned without review. NSF currently has many meritorious proposals from the FY 2025 submission window (October 15 – November 15, 2024). Subject to the availability of funds, NSF will instead consider funding additional awards from this cohort in FY 2026. The NSF MRI program anticipates accepting new proposals again during the next submission window, scheduled for October 15 – November 16, 2026.

CANISIUS

Plan for the Future

- The pause on NSF-MRI funding should not deter collaborative funding.
- Continue to look for funding sources
- Primarily Undergraduate Institutions can be valuable collaborators for a new facility with secondary beams
- Always looking for collaborations with R1 and other PUIs.