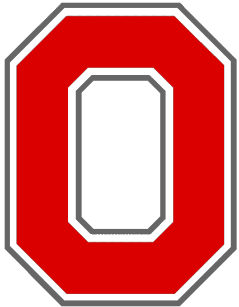


# **TOF-PID contributions & Brandenburg's Group at OSU**

Daniel Brandenburg

Oct 10<sup>th</sup>, 2022



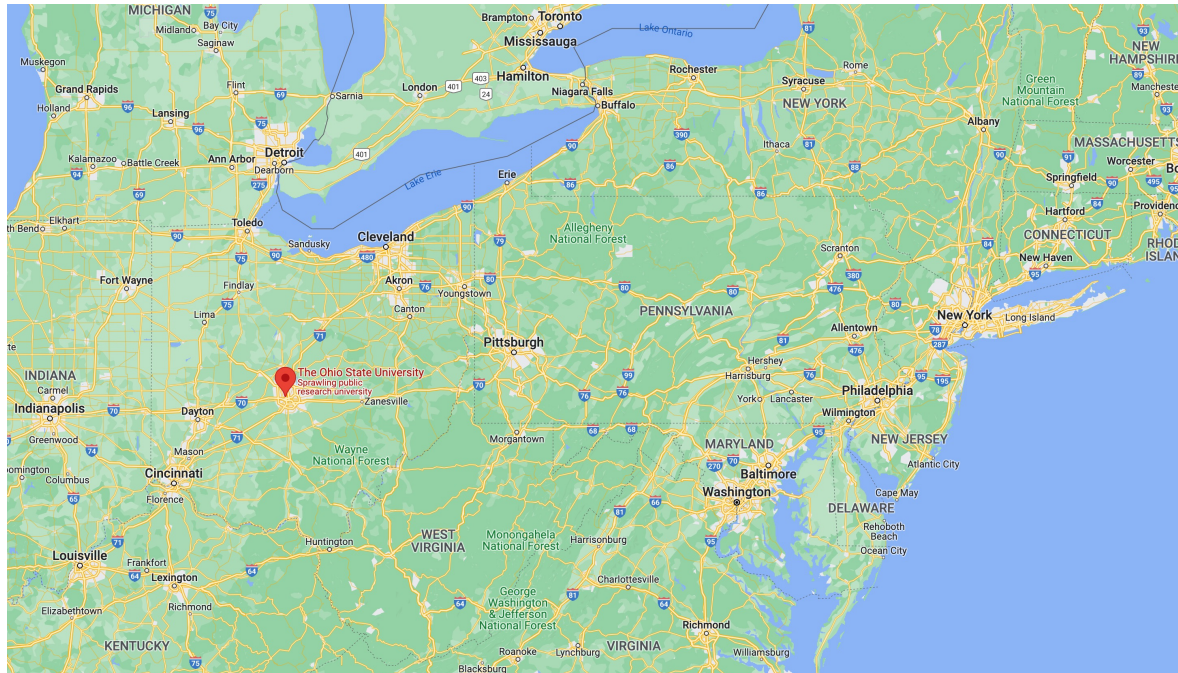
**THE OHIO STATE UNIVERSITY**

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# The Ohio State University

- **Location:**
  - Columbus, Ohio, USA
- **Founded: 1870**
- **High energy Physics Groups:**
  - STAR @ RHIC
  - ATLAS + CMS + ALICE @ LHC





# **A little about my relevant background**

- **Student at Rice University with Frank Geurts advisor and Wei Li**
  - Software coordinator for the STAR Time-of-Flight detector
  - Implemented software & performed TOF calibrations for several STAR datasets
  - Helped developed calibration procedure for STAR's endcap TOF
- **Contributions to the STAR Forward Rapidity Upgrade**
  - Software coordinator, develop simulation framework
  - Simulation studies of small-strip thin-gap chambers for EIC
- **Physics: Working on diffractive photo-nuclear production**
  - Natural connection to future EIC physics & need for TOF (e.g. diffractive  $\phi$  meson production)

# My group at The Ohio State University

- I start officially in Jan 2023
- Hiring two (2) post-docs (one with Mike Lisa) starting in Spring 2023
  - STAR physics and EIC focused
- Recruiting 2-3 students for research group
  - Expect some work on EIC related topics from each
- Lab space with clean room (sorry no pictures yet)
  - Area used to build STAR's Event Plane Detectors
  - Already has significant resources for testing detector components (PS, electronics workbenches, etc.)
  - I have ~50% of my startup funds available for use



Plan to have Xiaofeng Wang join in 2023

Experience on STAR FWD and photon physics

# MRI funded Electronics Lab & Resources

- The best equipped optical electronics lab for high energy physics research in US.
  - Three (3) automatic wire bonders (K&S 1470 and 8060 and F&K Delvotek G5)
  - Two (2) manual wire bonders
  - Wire-bond pull tester
  - Dice probe station with pattern recognition (Cascade Microtech PA200)
  - High speed scope (LeCroy SDA 825Zi-A 25 GHz/80 GS/s)
  - Agilent N4903A 12.5 Gb/s serial bit error rate tester (BERT)
  - Optical spectrum analyzer (OSA), and optical comparator
  - Precision vision measuring machine, fiber polisher and fusion splicer,
  - High power UV light
  - Precision scale (0.1 mg)
  - high resolution IR camera
  - One humidity chamber, and three environmental chambers and ovens



# Plans for possible contributions

- Immediate contributions could include simulation & tracking integration studies
- OSU Machine shop
  - Cost about \$10/hour
- OSU Engineers
  - Electrical and mechanical available on contract basis
- High Energy Nuclear Physics research Lab :
  - Use of sources to test detectors / prototypes
  - Electronics and/or DAQ testing
  - Clean room available
  - Significant startup funds available
- With MRI funded electronics lab
  - Chip design and fabrication
  - Very high-speed scopes and chip testing equipment
  - Note: if needed, will require coordination with LHC upgrade schedule

NB: Potentially additional manpower from Mike Lisa's group + future post-docs