

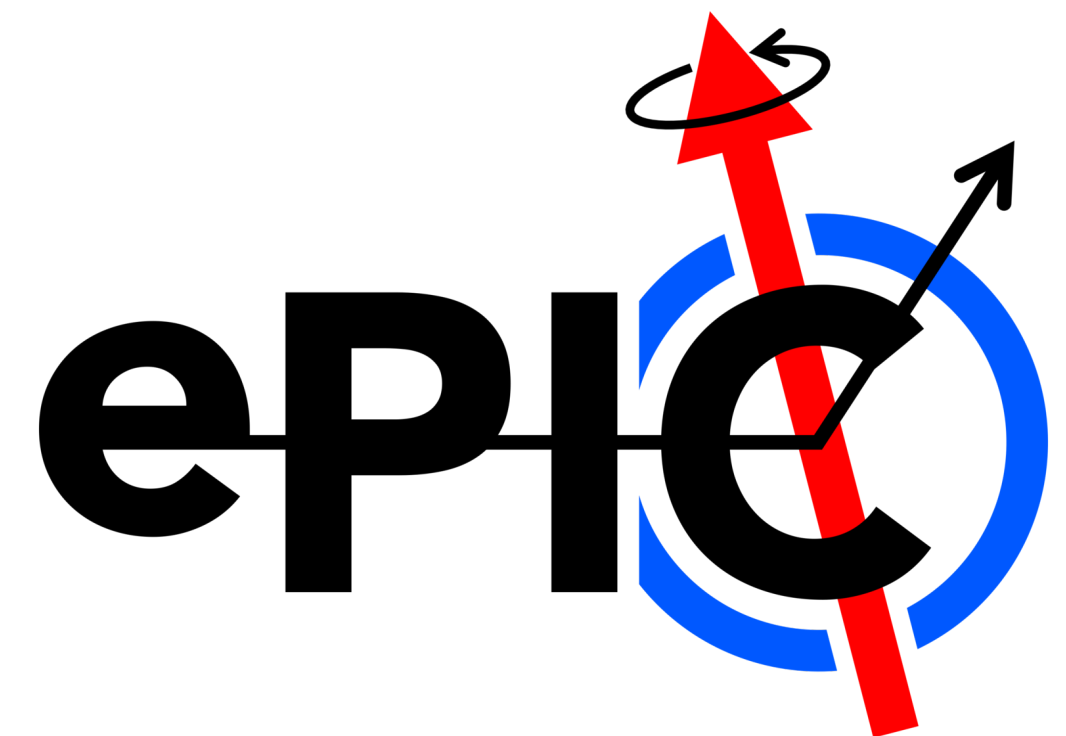
JGU Mainz proposal to join ePIC

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ePIC Collaboration Council Meeting

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Physics at JGU Mainz

- Institute for Physics (45 professors)
- Institute for Nuclear Physics (20 professors)



- Mainz Microtron (MAMI)
 - 1.6 GeV polarized electron beam, $\sim 100 \mu\text{A}$
 - Electromagnetic structure of hadrons (A1), tagged photon beam (A2), precision asymmetries (A4)

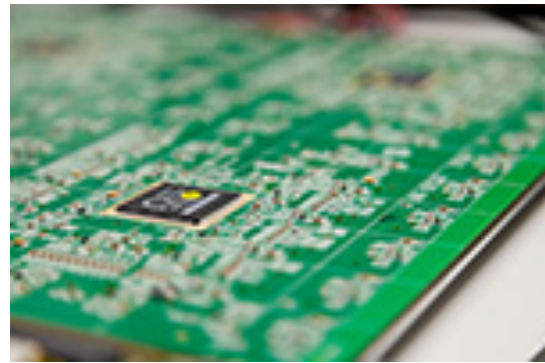
- Mainz Energy-Recovering Superconducting Accelerator (MESA)
 - 155 MeV polarized electron beam, $1000+ \mu\text{A}$
 - Internal gas jet target (MAGIX), precision asymmetries (P2), dark matter (DarkMESA)
 - First beam expected late 2025

PRISMA detector lab



- PRISMA Cluster of Excellence founded 2012
(renewed PRISMA+ since 2019, renewal PRISMA++ pending)
- Operates detector lab to support experimental activities
- Lab space + technical support

From [webpage](#):



Electronics

Including the design of high-speed boards for fast data analysis and digitization, analog signal-processing circuits, low-noise and low-power systems, trigger-less architectures and radiation hard electronics.



Photosensors

Featuring single photon sensitivity, a high detection efficiency, a large active area and/or high granularity, e.g. for the usage in calorimeters, Cherenkov detectors and astroparticle physics experiments.



Tracking Detectors and Time Projection Chambers (TPC)

Aiming e.g. at systems providing excellent spatial resolution at high intensities, large-area gaseous detectors, TPCs based on noble liquids and Gas Electron Multiplier (GEM) and Micromegas applications.



Laboratory for Scintillation and Fluorescence Detectors (LSFD)

Being set up within the scope of PRISMA+ as new infrastructure for the development and characterization of scintillation and fluorescence materials.

- ATLAS (muon detector drift panels, electronics)
- CALICE (calorimetry, SiPM characterization, readout)
- IceCube
- MAGIX/P2
- ...*ePIC*?

Current/planned contributions and personnel

Physics analysis

- Co-convener of Detector 1 inclusive PWG (2022-2023)
- Co-convener of ePIC inclusive PWG (2023-current)
- Contributed to inclusive physics studies, electron ID, kinematic reconstruction
- Plan to stay active after co-convener ship ends (Summer 2025)

Hardware

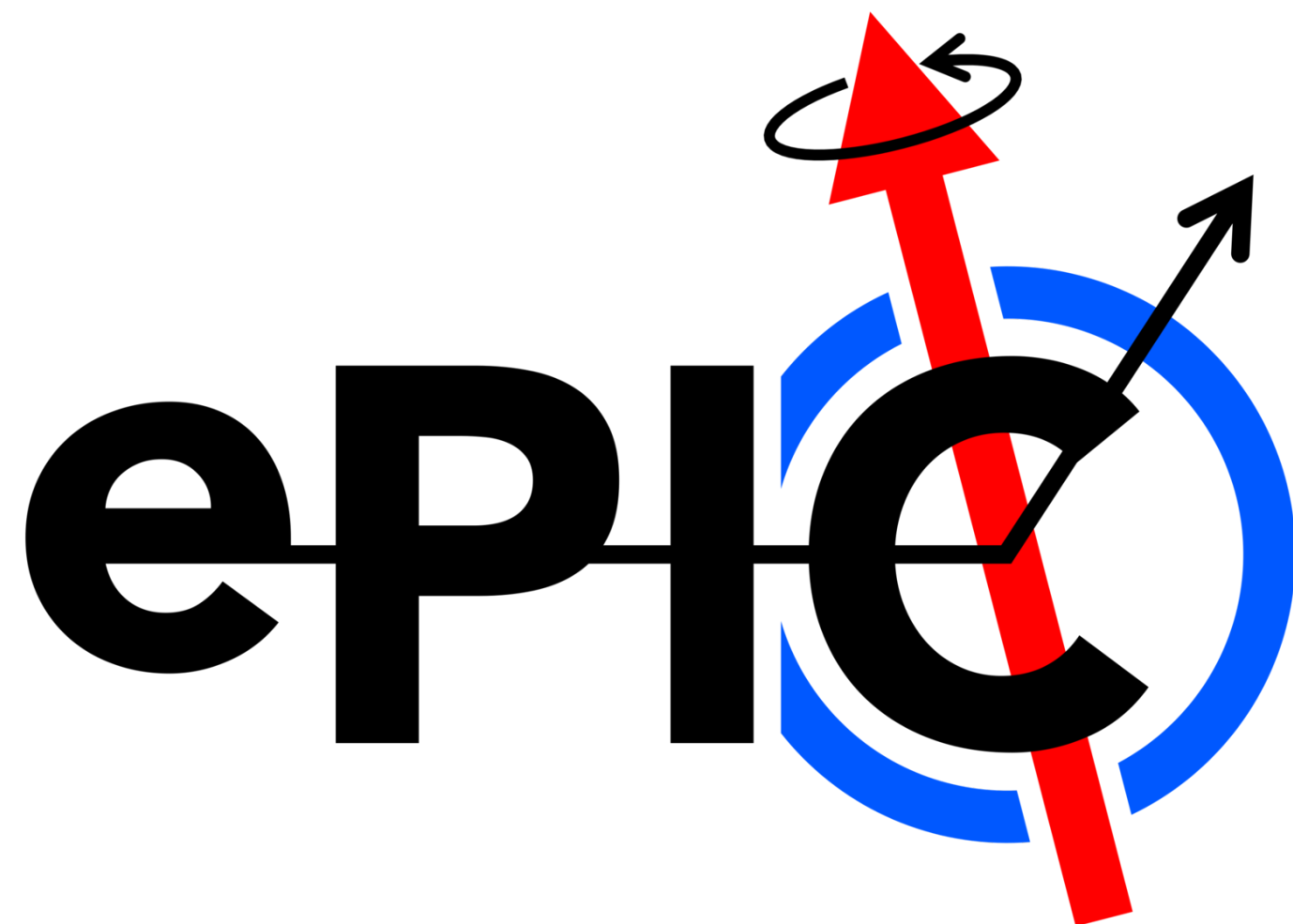
- Discussed opportunities with luminosity DSLs
- Will focus efforts on direct-photon detector
 - Need simulation of quartz-fiber DPD
 - Produce test module with U. York, test at MAMI
 - Work with detector lab for readout electronics?

People

- Currently only one active faculty member (me)
- Imminent search for 1 postdoc + 2 PhD students
 - Primarily MESA-focussed, but free to work on ePIC part-time
- Develop well-defined ePIC-related projects for potential Master's students

Summary and outlook

- I'm not new to ePIC, but JGU is!
- From JGU, continue contributions to inclusive physics and reconstruction, additionally get involved with luminosity efforts
- Hopefully grow JGU participation as time goes on
- Long term: working with colleagues on strategies to obtain funding for ePIC/EIC projects in Germany



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