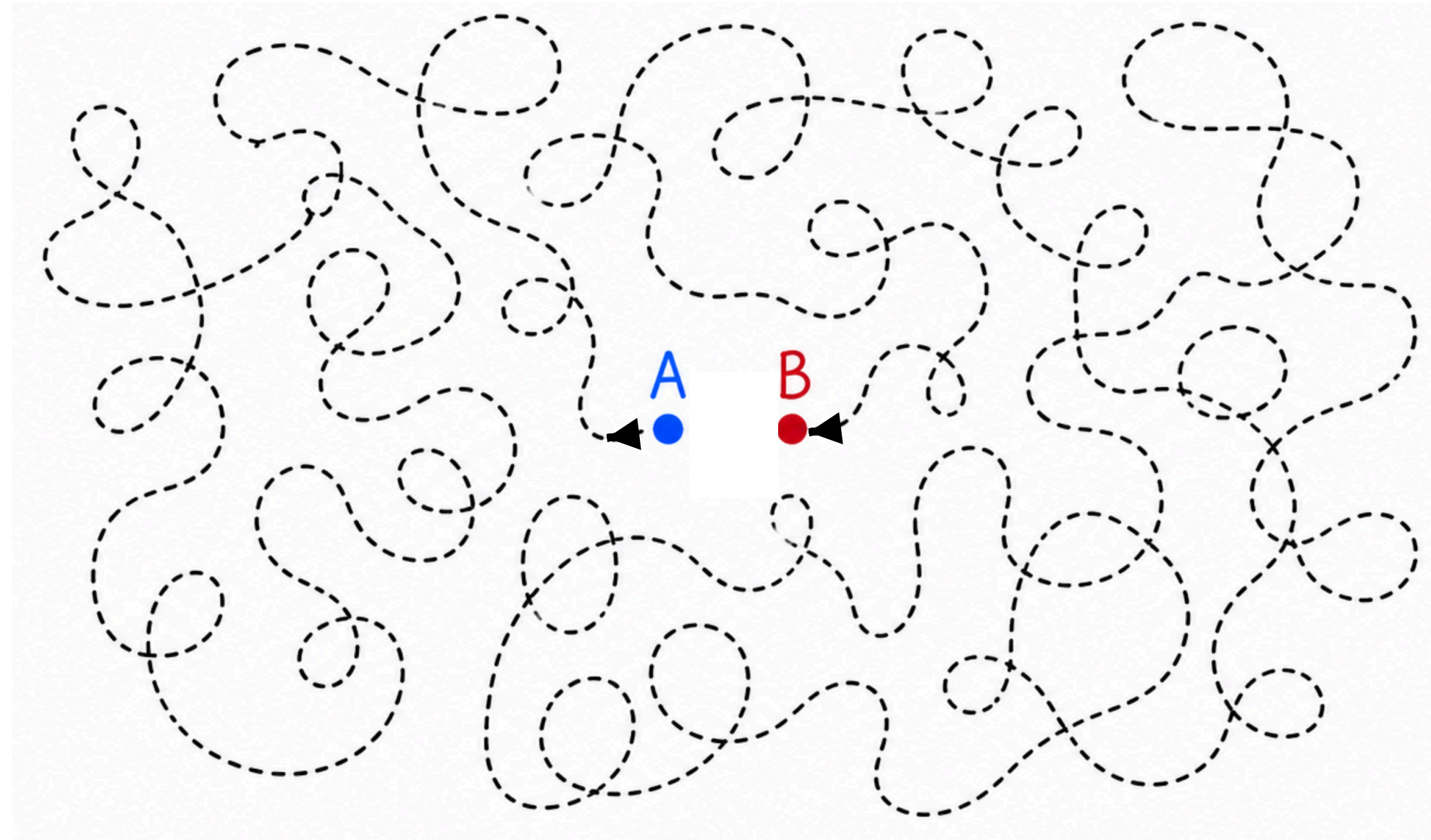




Early Career Panel: Gian Michele Innocenti (MIT)



Undergraduate research (**ZEUS** and **ALICE**)

PhD (**ALICE**, Torino/CERN)

Postdoc (**CMS**, MIT)

Research Staff (**ALICE**, CERN)

Assistant Professor at MIT (CMS** & **ePIC**) since 2024**

Past research

Undergraduate work (DESY): Dijet production in DIS events at HERA with ZEUS

→ My earliest contact with HEP, and with the Pomeron!

PhD with ALICE (Torino/CERN)

- First measurements of **open charm in heavy ions (D_s)**
- Physics performance for the MAPS-based silicon tracker for ALICE (ITS2)

→ early days of heavy-flavor physics in HI and Monolithic Active Pixel sensors

Postdoc at MIT:

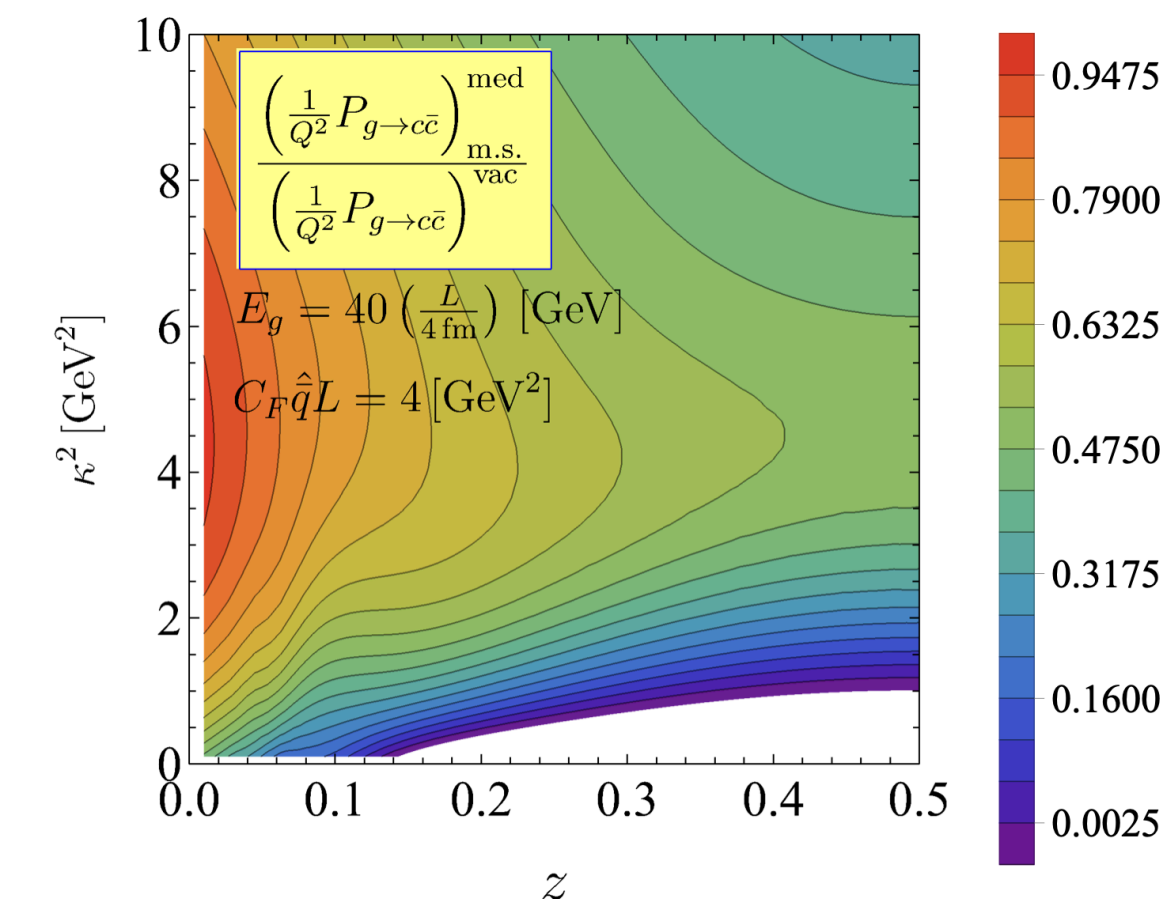
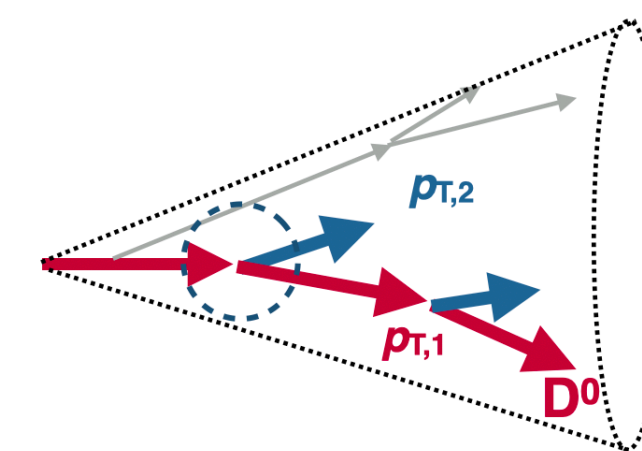
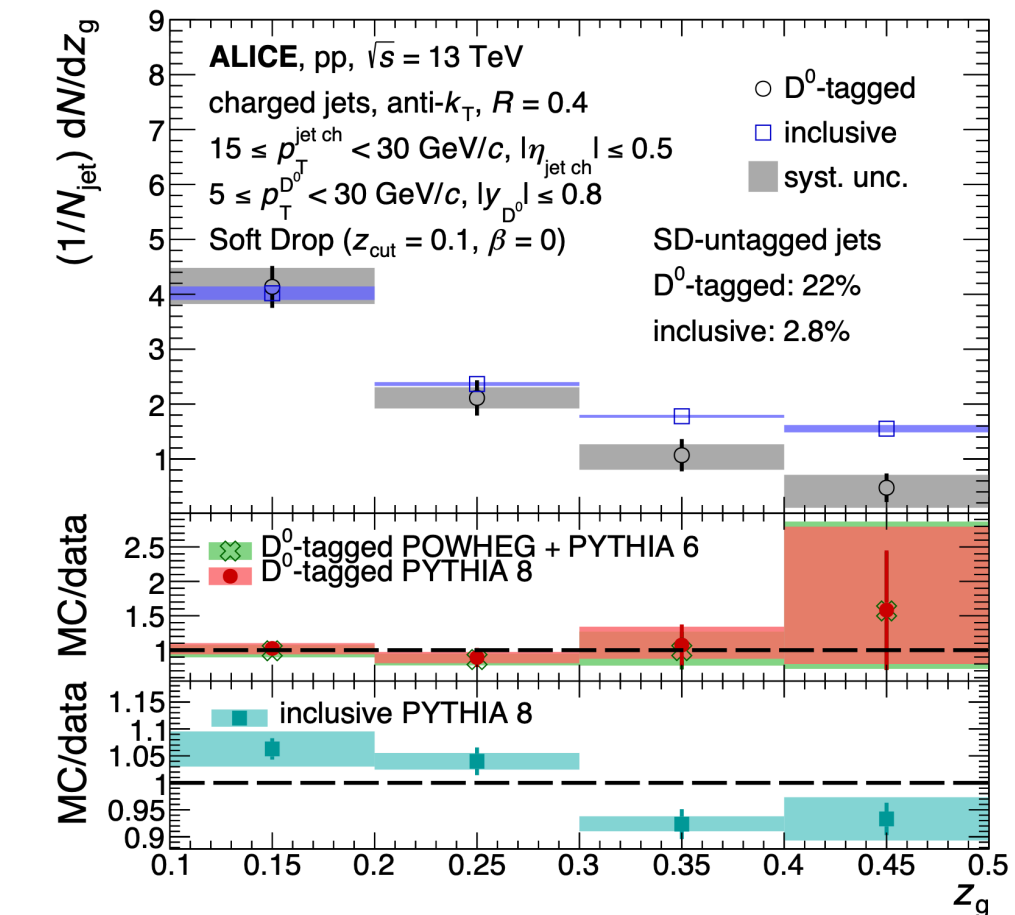
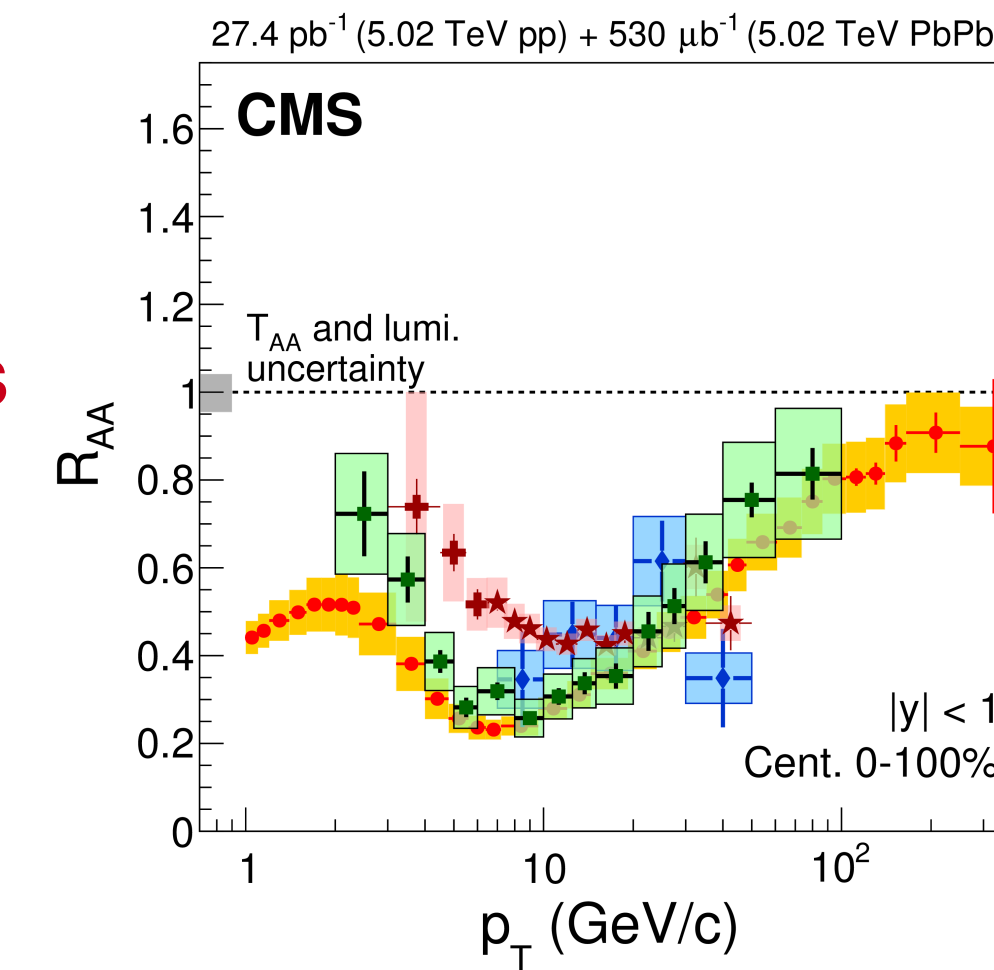
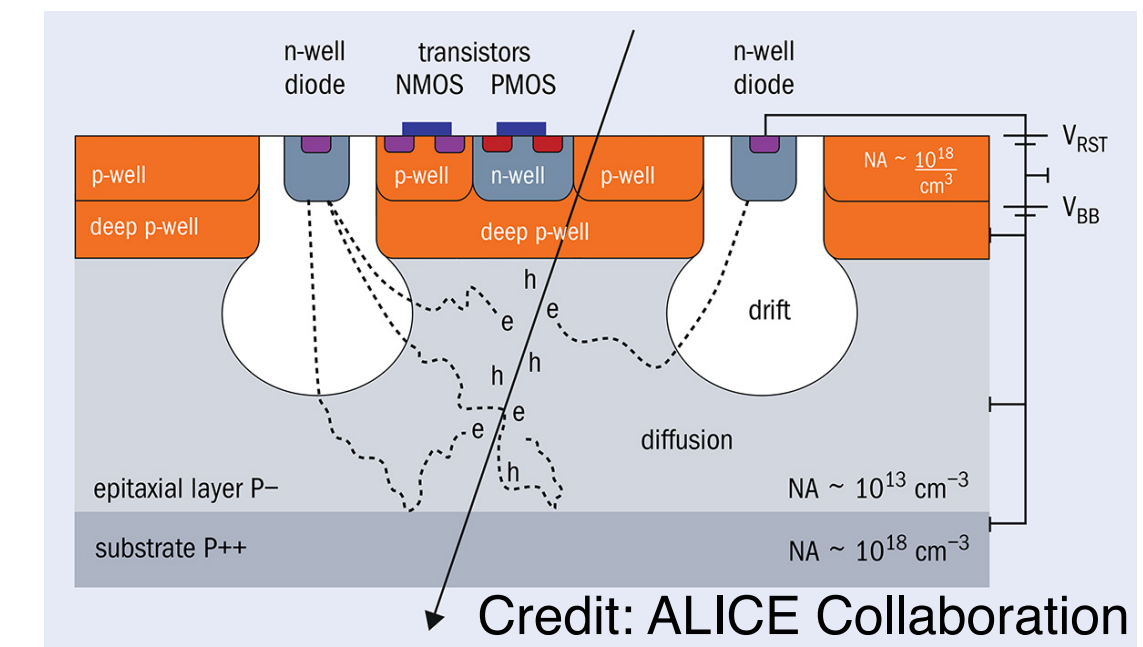
- Upgrade of the CMS Level-1 calorimeter trigger (Stage-1)
- High- p_T D^0 production, B-exclusive reconstruction, in-jet D^0 production
- Searches for collectivity in e^+e^- collisions using archived LEP data

→ Heavy quarks as a perturbative probe for the parton shower

Research staff at CERN with ALICE

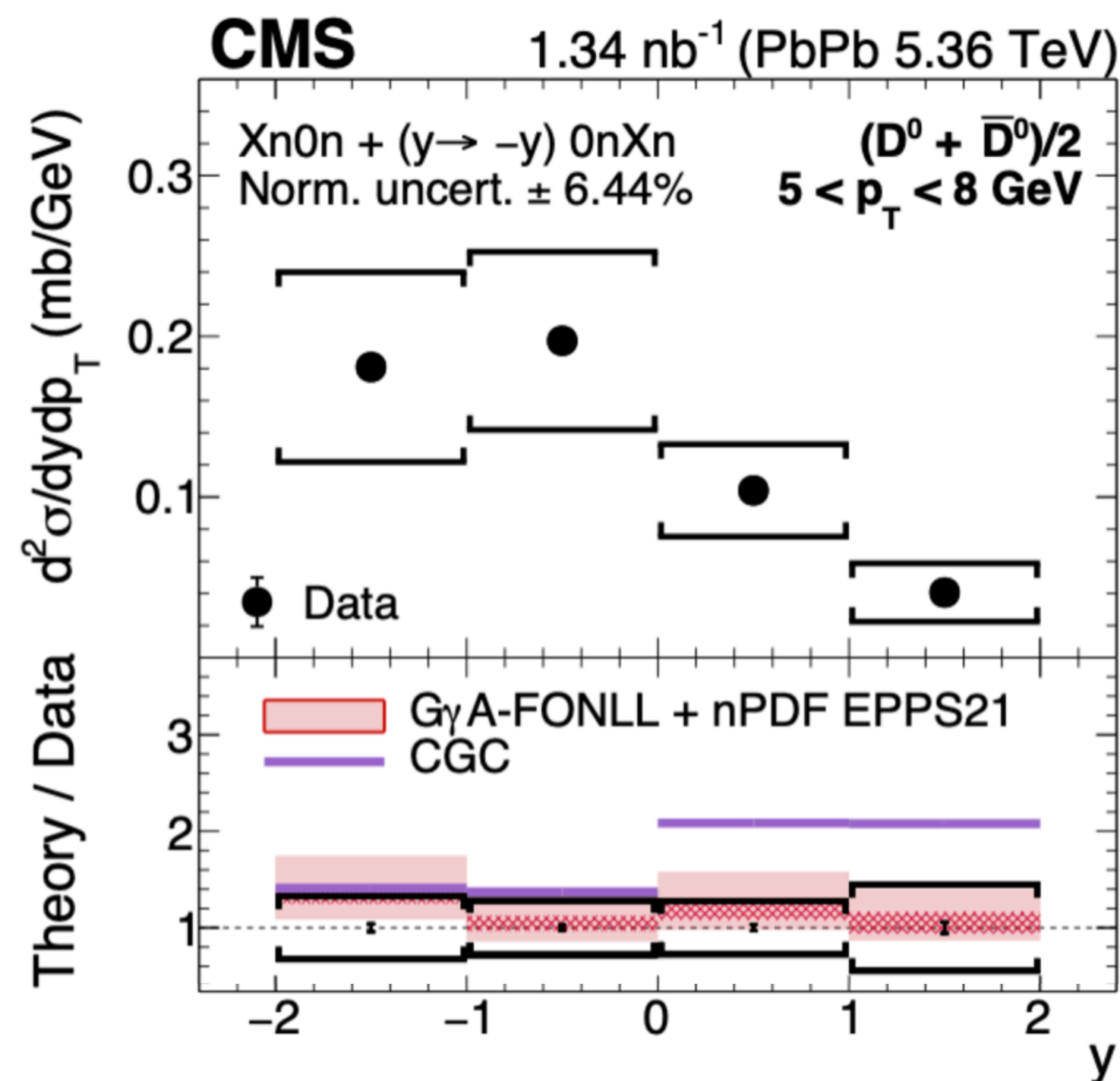
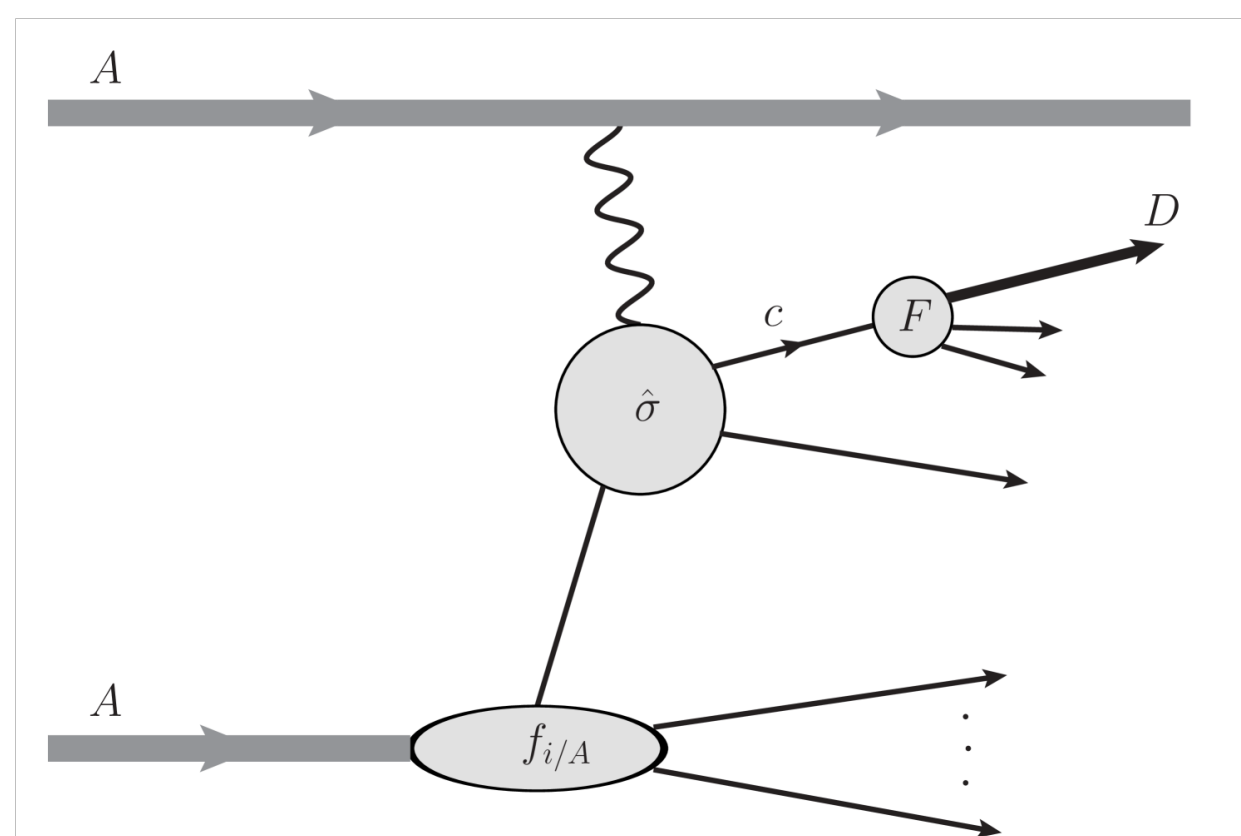
- Heavy-quark jet substructure and fragmentation functions
- Design of the ALICE 3 experiment for Run 5 (ultra-light bendable MAPS)
- New quenching observables developed with the CERN theory group

→ New substructure tools (theory and experiment) to enable “microscopic” access to QCD modifications

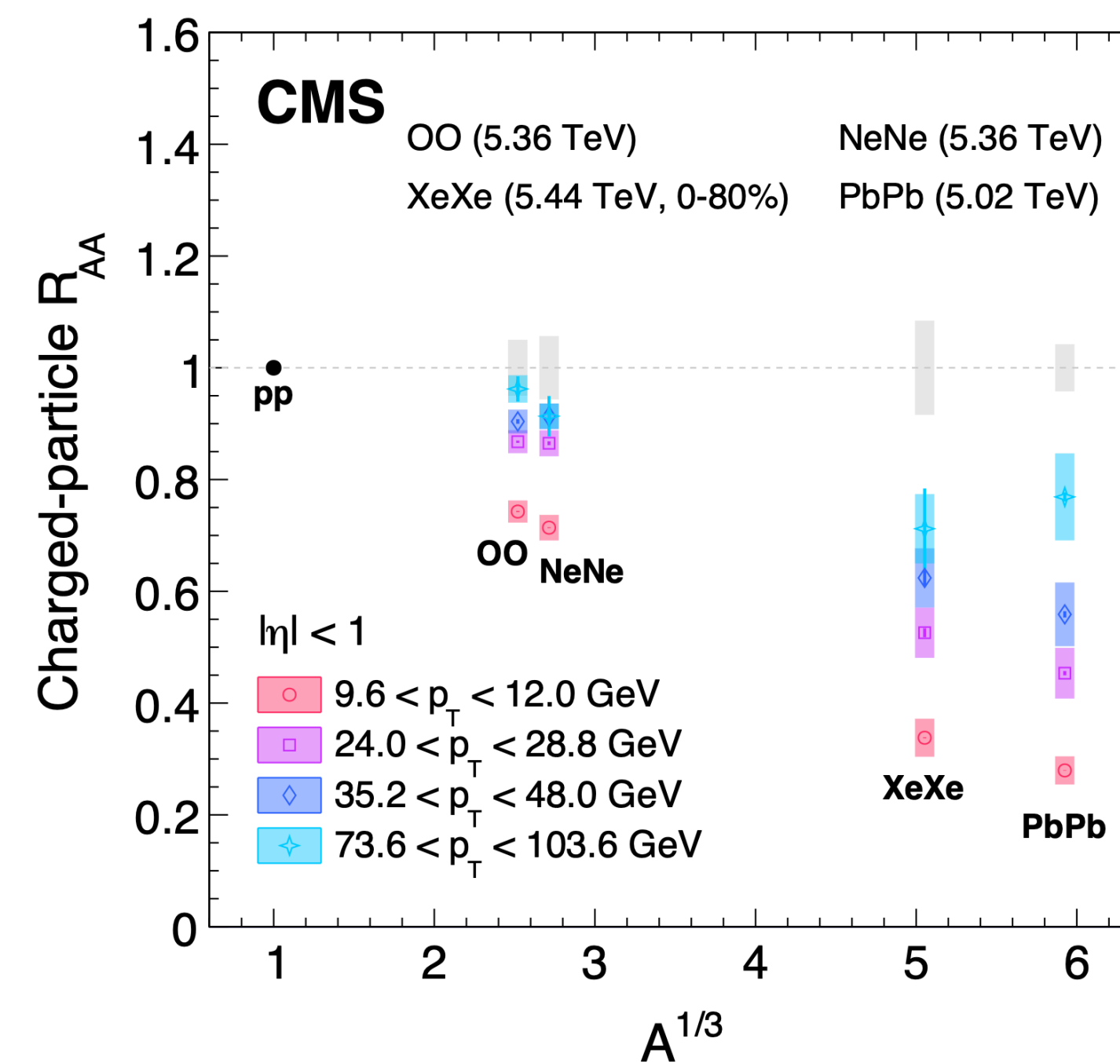


Assistant professor at MIT: physics with CMS

Ultrapерipheral heavy-ion collisions at the LHC



Evidence for quenching in light ions at the LHC



- **New UPC trigger strategy for CMS**
- **First measurements of open-charm (D^0) production in UPCs with CMS**
 - gluon dynamics in protons and nuclei
- **GYA-FONLL: pQCD calculations in UPCs and eA collisions**

First evidence for quenching in oxygen-oxygen collisions and system size dependence of E_{loss}

→ Now searching for quasiparticles in light-ion collisions

→ Now exploiting high-statistics samples from 2024-2025

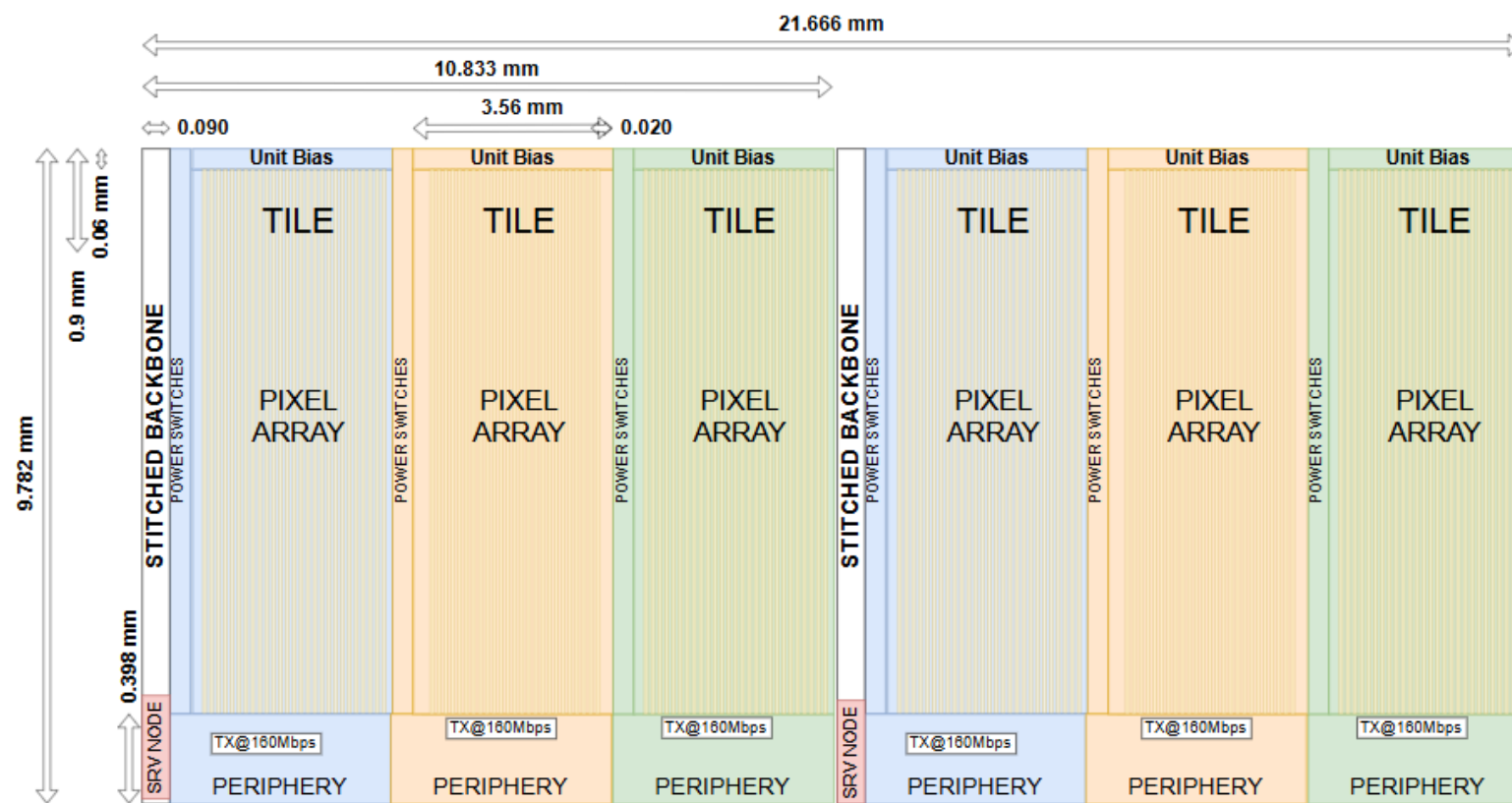
→ **New observables:** hard diffraction, heavy-flavor correlations and jets in UPCs

Assistant professor at MIT: a pixel lab for the ePIC SVT

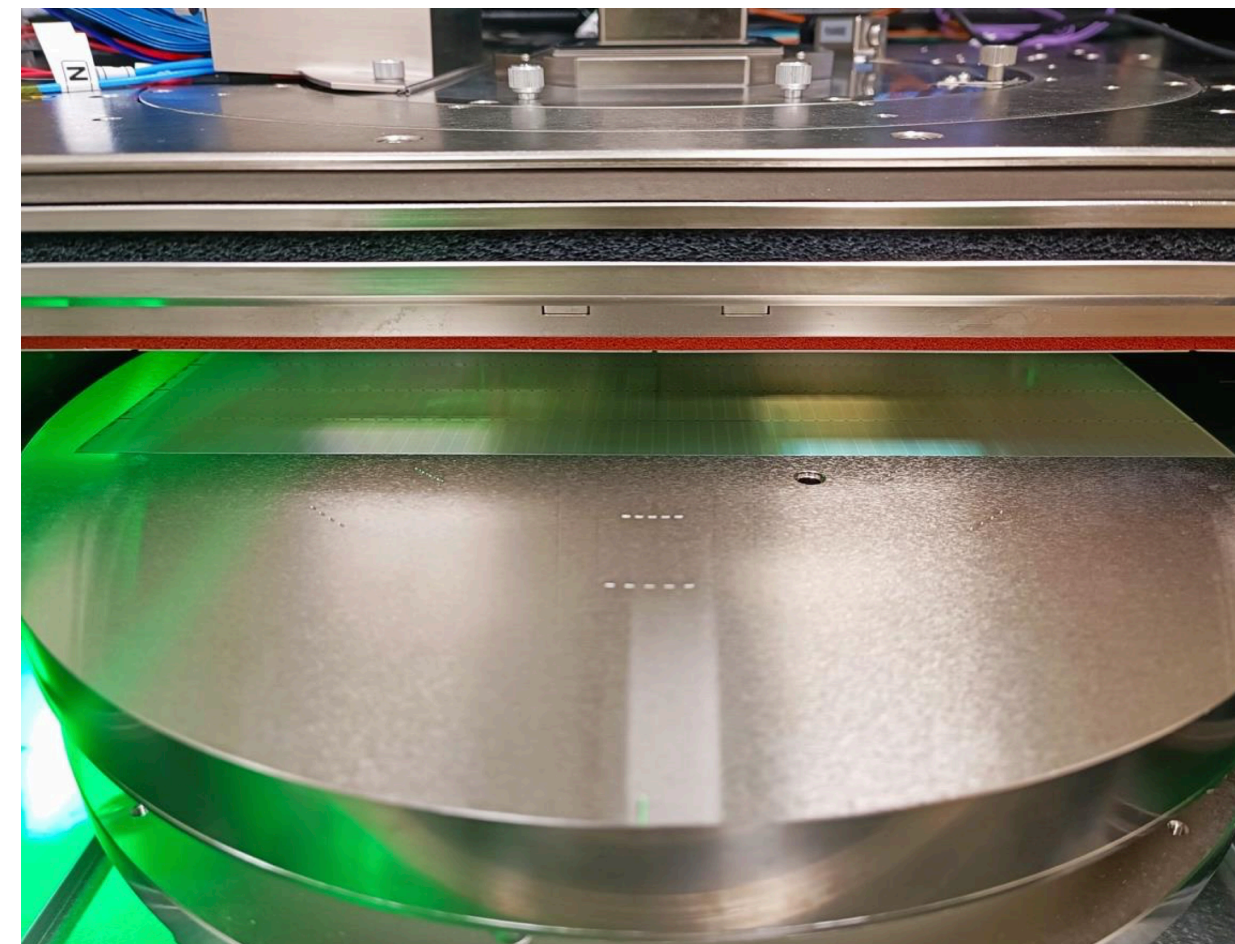
<https://pixelphilab.mit.edu>

MIT Pixel ϕ lab for the ePIC Silicon Vertex Tracker (SVT)

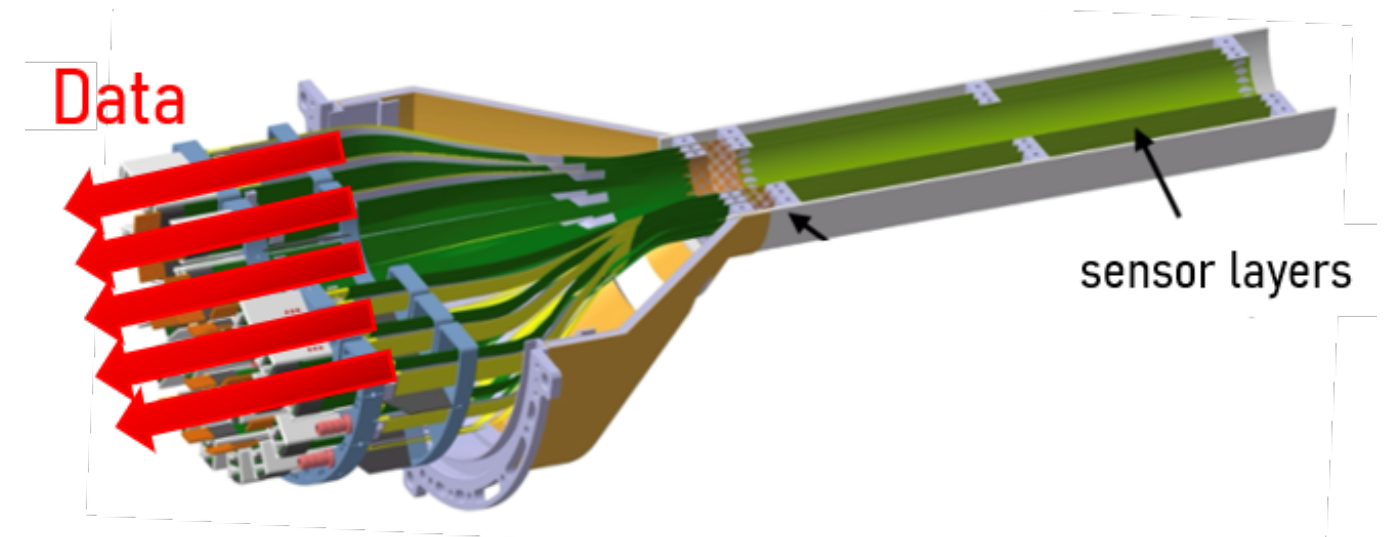
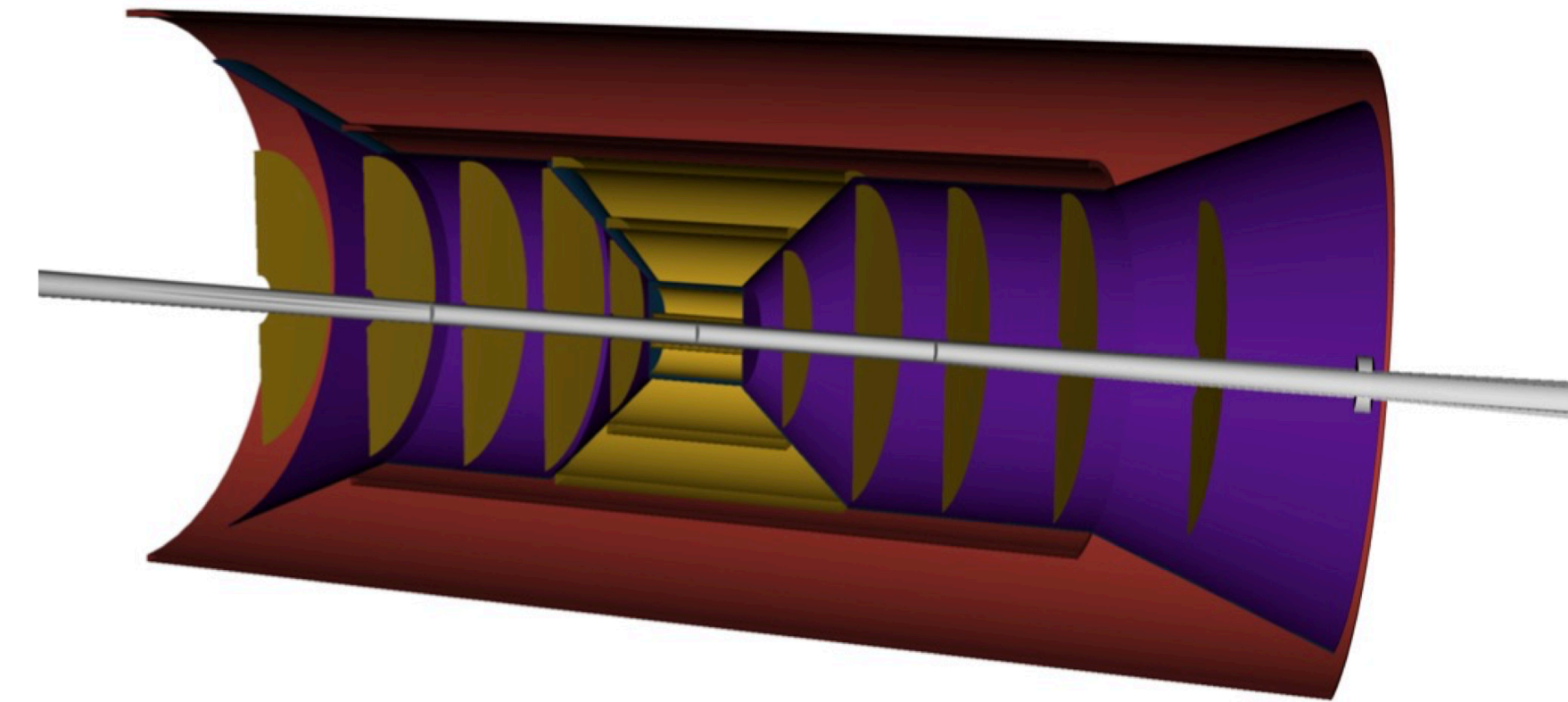
3 microelectronics engineers, 2 scientists, 2 postdocs, and several students



Digital design for ePIC MOSAIX sensors



New technologies for sensor characterization and testing (with high-frequency vertical probing)



On-chip AI for data reduction and compression

ePIC at the EIC is a unique opportunity to achieve multiscale characterization of nuclear matter

→ complement and expand our existing program with UPCs at the LHC (and RHIC)

Special thanks to the EIC community and to the ePIC/SVT collaboration