Introduction and goals

Simons grant kickoff meeting
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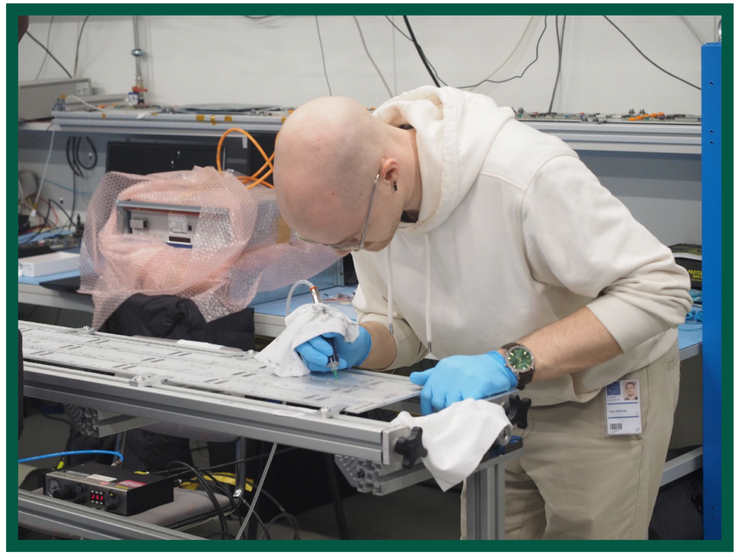
Past, present, and future

Roadmap

- Undergrad/postgrad Yale (ATLAS/vR&D) → Grad Northeastern (CMS) → Postdoc UTK
- ~2.5 years at 10–20% on muon collider with NEU/UTK → transitioning to ≳75% time ~O(weeks)

What's my background in HEP?

- Physics + objects: Higgs physics, scalar-pheno SUSY, photons, jets, neutrons, taus, (neutrinos)
- Detectors: EM calorimetry + triggering/object formation, Si-based picosecond timing, (LArTPC)
- Machine learning, muon collider software, G4



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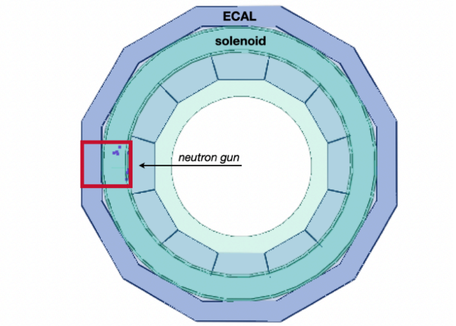
Muon collider so far: BIB neutrons

- Passive neutron BIB reduction in 10 TeV environment with focus on ECAL impact
  - Result: Standard G4 list switched from QGSP_BERT → FTFP_BERT_HP
- Current projects with NEU
  - Benchmarking physics lists in Geant4
  - Shielding material refinement + boron isotopic purity

Near-term muon collider plans

- Geant4-FLUKA study → physics list treatments
- Going forward: detector-focused projects/interests
  - Calorimeter refinements
  - AI/ML-based improvements to clustering/object formation



[USMCC talk]