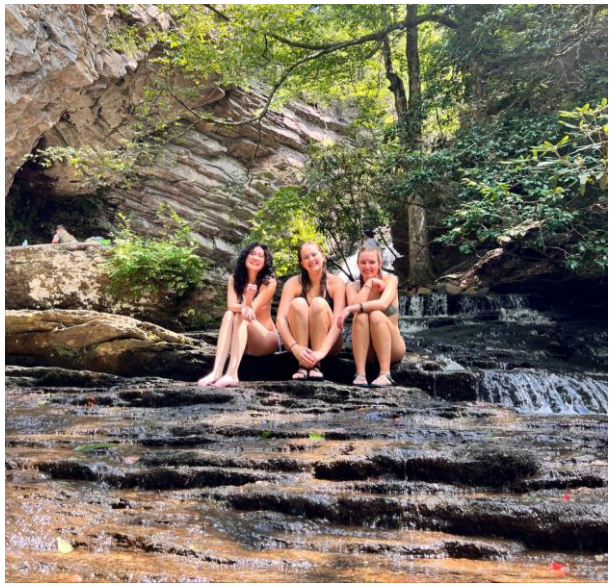
US CMS PURSUE 2024

Ada Collins | Rhodes College

About Me

- Ada Collins (she/her)
- From Greensboro, North Carolina
- Sophomore at Rhodes College
- Physics and Math double major
- Interests: live music, hiking/being outdoors, writing letters
- Goals: Stop complaining every time it gets cold, maintain my German proficiency!



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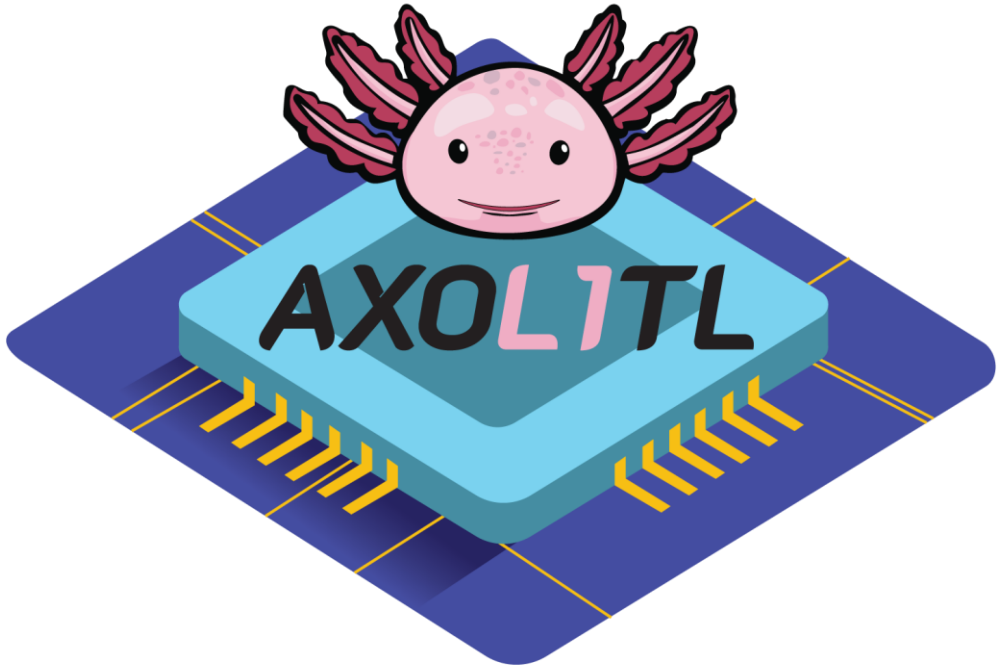
Why US CMS PURSUE?

- Interested in particle physics
- Replicates real experience
- Highlights diversity
- Potential to continue research
- Chicago!

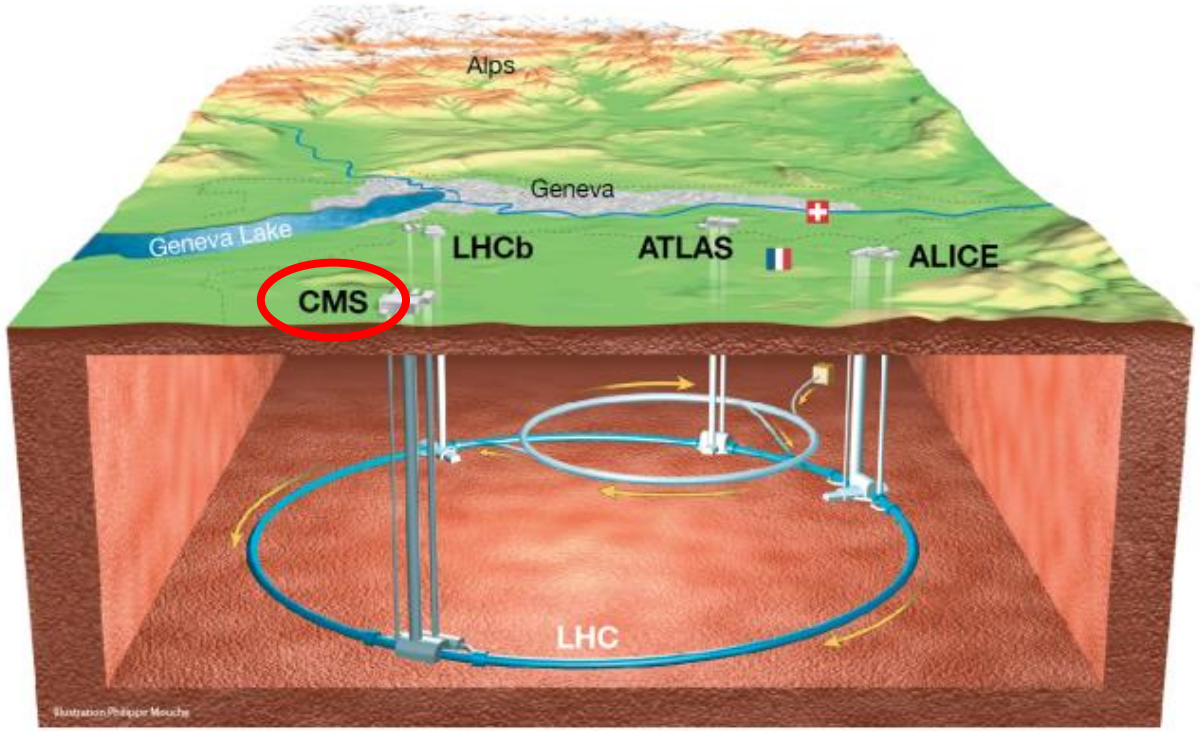
WYNK
DCFS

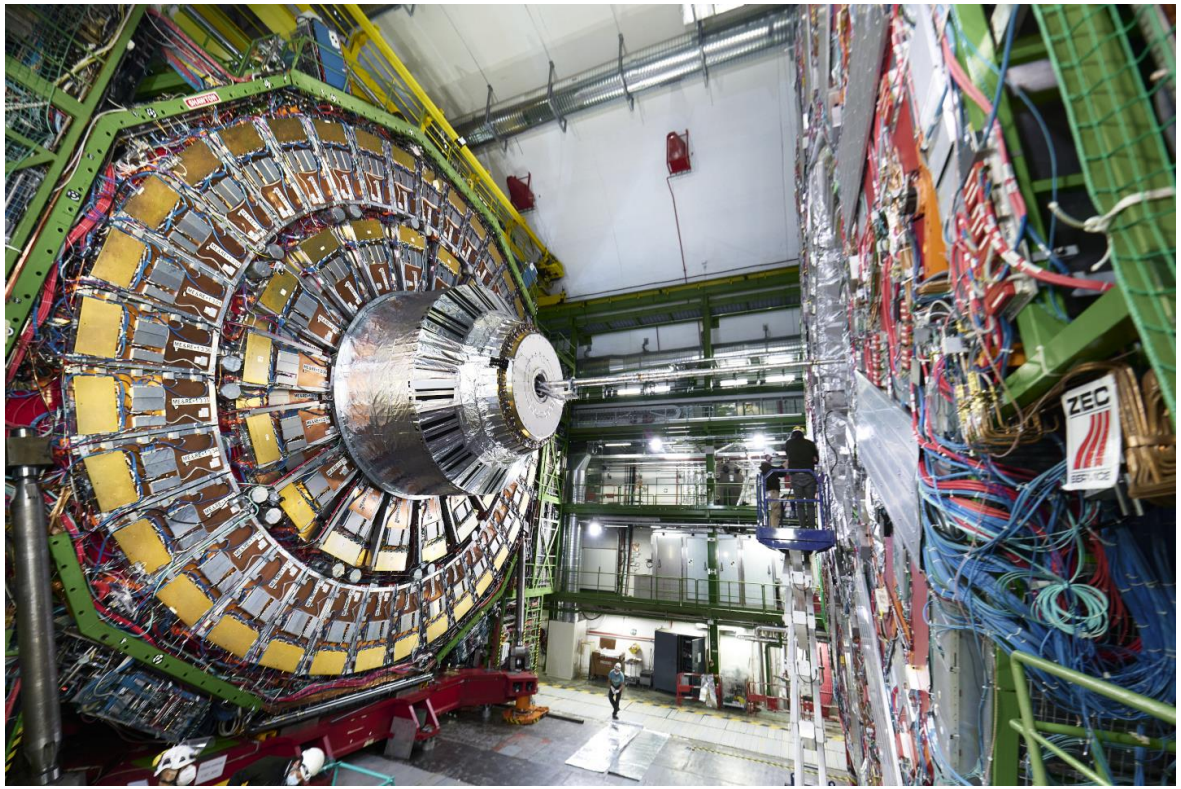
My Project

- “Characterizing AXOL1TL’s Trigger Efficiency”
- Worked with Dr. Jannicke Pearkes
  - Post-doctoral researcher at University of Colorado Boulder
  - Positioned at CERN
  - Zoom!
- 2 weeks of bootcamp → 4 weeks of preparation and literature review → 4 weeks of project work
- Work with team at Fermilab, joined research meetings

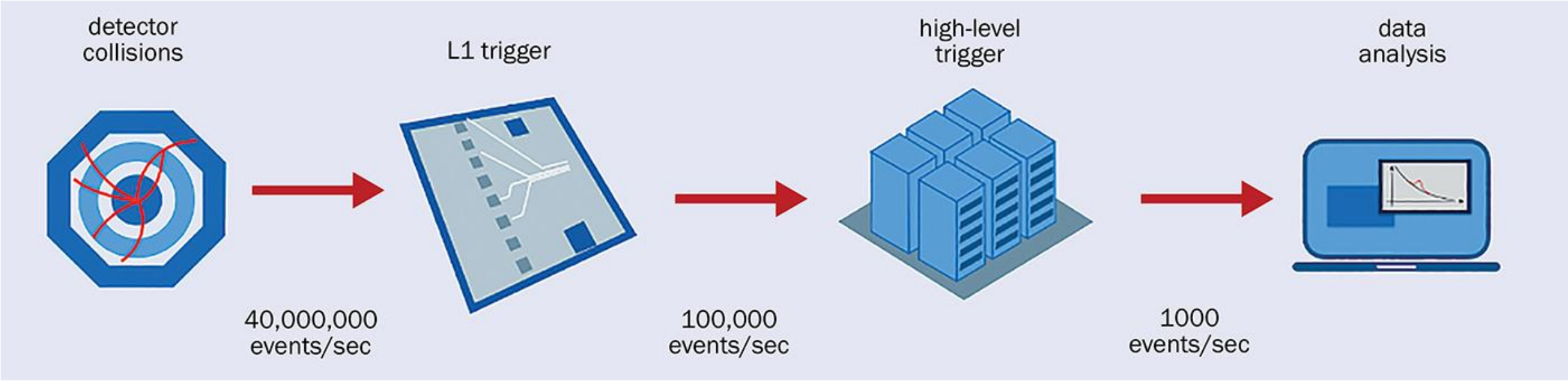


What is CMS?



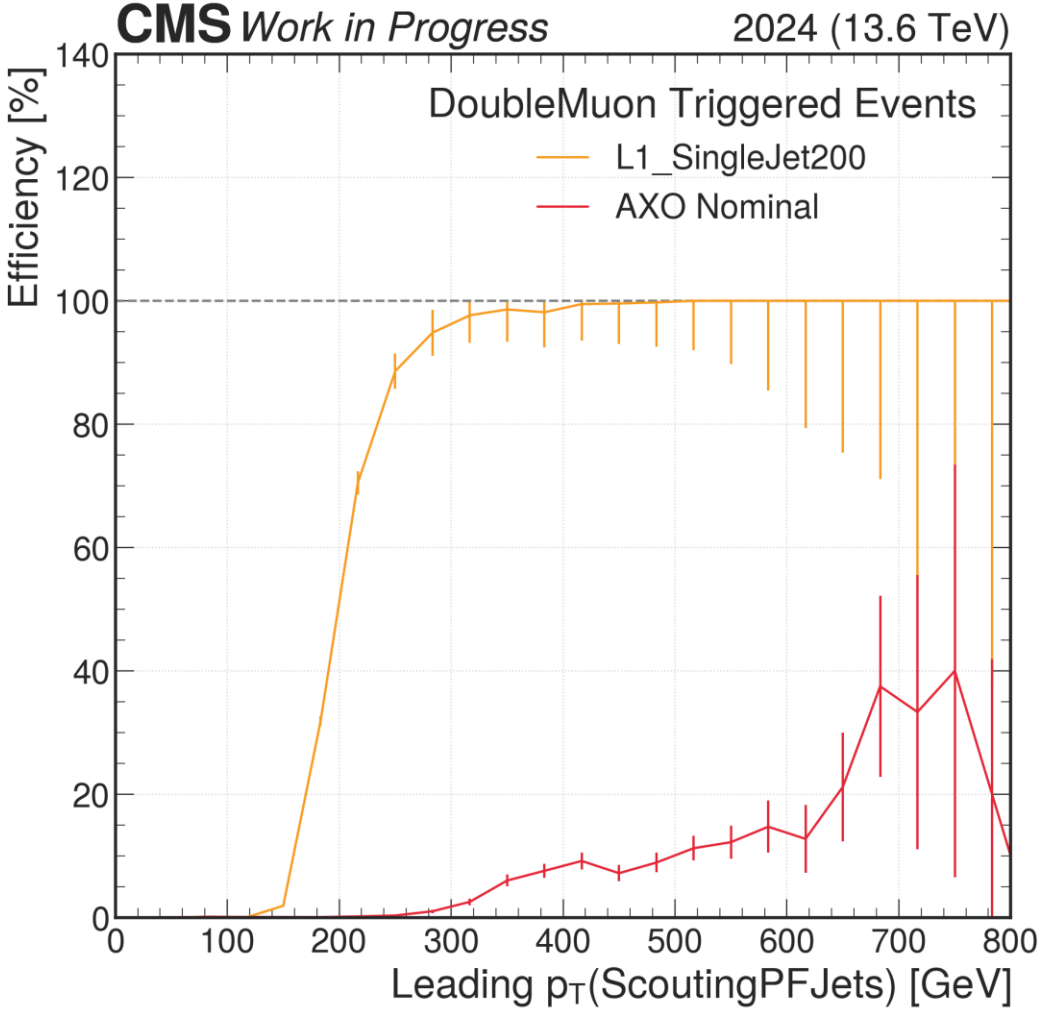


Trigger System

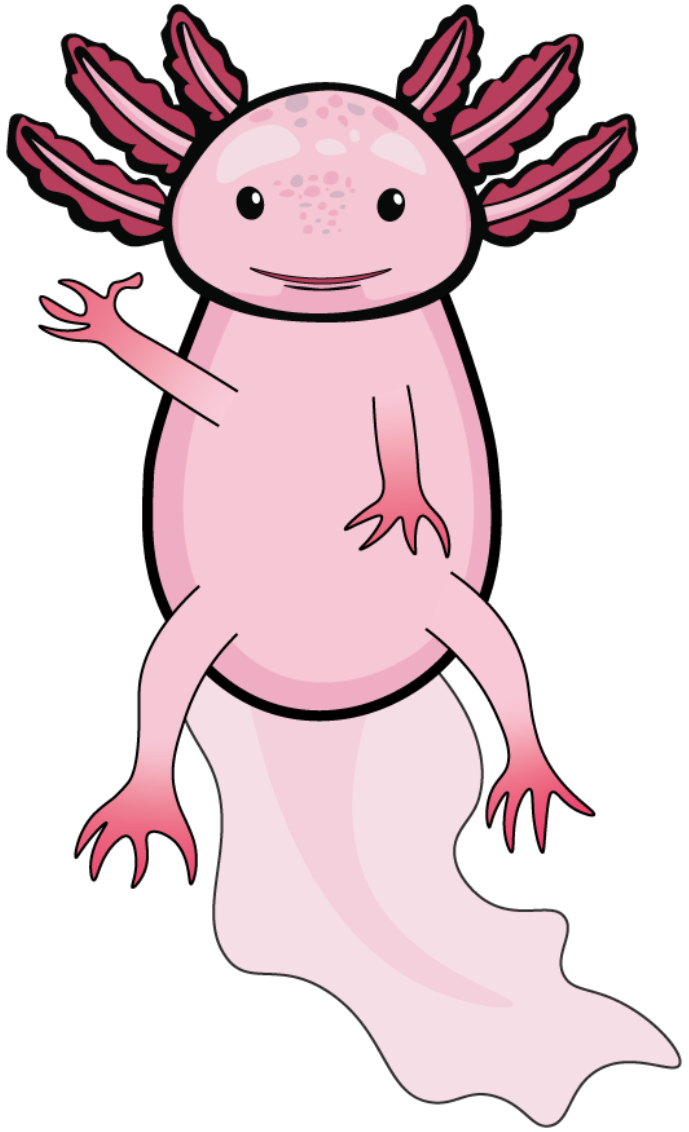


What is AXOL1TL?

- **A**nomaly e**X**traction **O**nline **L**evel **1** **T**rigger a**L**gorithm
- First machine learning (neural network!) algorithm at the Large Hadron Collider
- Started data analysis process
  - Trigger efficiency: “What is the chance that AXOL1TL selects an event?”



Where Am I Now?

- Proficiency in Python, Git, LaTeX, HEP packages, distributed computing networks
- Understand machine learning, participating in professional research team
- Continuing my research!
- Presenting at APS' Conference for Undergraduate Women in Physics in January
- Using my plots in a paper!
- Planning on graduate school in particle physics

Questions?