

PHYSICS
ARTS & SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

FOR APPLICATION YEAR: 2025

PROJECT TITLE: Probing the Standard Model with the LHCb Detector at the Large Hadron Collider

Conor Henderson
Physics Department
441 Geology-Physics Building
University of Cincinnati
Cincinnati, OH 45221.
Email: conor.henderson@uc.edu

Project Description

With the Large Hadron Collider (LHC) at CERN, we are seeking to probe beyond the Standard Model of particle physics, using proton collisions at the highest energies achieved in the laboratory. Prof. Conor Henderson collaborates on the LHCb experiment at the LHC, where his group is making measurements of electroweak physics processes and performing direct searches for

potential new physics beyond our current Standard Model.

As part of this research group, students will have an opportunity to gain experience with advanced

programming in C++/python, to learn software, simulation and machine learning tools used in

high-energy physics research, and to perform analysis on data collected by the LHCb experiment.

Training in programming and the appropriate software tools will be provided, so prior experience with programming is helpful but not essential, provided the student is enthusiastic to learn.

Students should be interested in physics, but specific physics courses are not required for this project.