PHYSICS
ARTS AND SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2019

PROJECT TITLE: Applications of Machine Learning in High Energy Physics

Michael Sokoloff  
Physics Department  
411 Geology/Physics Building  
Cincinnati, OH 45221  
mike.sokoloff@uc.edu  
Phone: 513 556-0533

Gowtham Atluri  
Department of Electrical Engineering and Computer Science  
Rhodes Hall 829  
Cincinnati, OH 45221  
atlurigm@ucmail.uc.edu  
Phone: 513 556-3196

Project Description

The student will work with a cross-disciplinary team of experimental high energy physicists and computer scientists that is developing machine learning algorithms for the LHCb experiment at CERN:

• to replace the most computationally expensive parts of the event pattern recognition algorithms;
• to increase the performance of the event-classification algorithms; and
• to reduce the number of bytes persisted per event without degrading the physics performance.

The student should have significant Python programming experience, be comfortable with multidimensional calculus, and have some college-level experience with probability and statistics. Knowledge of physics at the level of the freshmen-level calculus-based course will be useful, but is not necessary.