PHYSICS DEPARTMENT  
COLLEGE OF ARTS AND SCIENCES  

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN  

APPLICATION DEADLINE: 03/01/2018  

PROJECT TITLE: Applications of Machine Learning in High Energy Physics  

Michael D Sokoloff  
GEO-PHYS 411  
Physics Department, ML0011  
513 556-0533  
mike.sokoloff@uc.edu  

Project Description  

The student will work with an experimental high energy physics (particle physics) group that is developing machine learning algorithms  
• to replace the most computationally expensive parts of the event pattern recognition;  
• 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.