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
\( \text{\textcopyright} \) to replace the most computationally expensive parts of the event pattern recognition;
\( \text{\textcopyright} \) to increase the performance of the event-classification algorithms; and
\( \text{\textcopyright} \) 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.