CERN Summer Research Experience for Undergraduates
“I love CERN and would recommend this program to any interested person in the field of physics. CERN is the pinnacle of big physics and truly an impressive facility and organization given the complexity of all the different experiments and collaborations. It’s a once in a lifetime opportunity”
—U-M CERN REU Student
The University of Michigan CERN Summer Research Experience for Undergraduates (REU) Program provides selected undergraduate students from around the United States the opportunity to conduct research with leading physicists at one of the world’s premier international laboratories, CERN, in Geneva, Switzerland.

Through this nine-week program, students work on projects contributing to the field of physics with active research groups at CERN while receiving hands-on training in current techniques in high-energy physics. Students have the opportunity to participate in the prestigious Summer Student lecture program.

CERN, the European Organization for Nuclear Research, is the world’s largest center for research in particle physics and the site of the world’s largest and most powerful particle accelerator, the Large Hadron Collider and the birthplace of the World Wide Web. The picture shows CERN in the foreground and Geneva in the background.
THE OPPORTUNITY OF A LIFETIME

Students in the CERN Summer REU Program receive:

• A stipend and travel reimbursement
• Housing on the CERN campus
• Access to world-class research facilities
• One-on-one instruction from internationally recognized scientists
• Insights from the renowned CERN Summer Student Lecture Program
• Assistance from an on-site coordinator from the University of Michigan
• Opportunities to explore Europe and meet people from around the world

“I know that I’m a much better scientist and that I understand so much more both technically and culturally than I ever could imagine.”
—U-M CERN REU Student
Research Experiences
The exact research projects completed each year depend upon the students’ interests and faculty availability. Applicants are asked to identify their area of interest in the online application and also provide additional details in their essay. Examples of research projects include:

- Determining the Spin of the Higgs
- Hadronic Interaction Studies for ATLAS Inner Detector for the Integrated Simulation Framework
- Particle Trapping: Stable Islands of Transverse Phase Space
- ALICE Trigger and Event Selection
- Resolving the Neutrino Ambiguity
- Efficiency of Jet Algorithms

Summer Student Activities
- Research with active CERN groups
- Summer Student Lectures
- Research Presentations
- Travel

Possible 2012 Higgs event in the CMS detector.
KEEPING THE U.S. CONNECTED WITH THE WORLD OF PHYSICS

Program History
Homer Neal, Ph.D., the Samuel A. Goudsmit Professor of Physics at the University of Michigan and the Director of the UM-ATLAS Project at CERN, was instrumental in the development of the Research Experiences for Undergraduates program domestically in 1986 and at CERN in 2001. With his leadership, the University of Michigan Department of Physics has been successfully administering the CERN Summer Research Experience for Undergraduates with support from Ford Motor Company and the U.S. National Science Foundation for more than a decade. In that time, more than 100 U.S. undergraduate students have been given the opportunity to work with leading international researchers at CERN, the hub of physics research activity worldwide.

“My own experience at CERN as a Fellow in the 1960’s gave me the confidence that I could succeed in physics. This is why I have dedicated myself to making it possible for future students to have the opportunity for a period of study and research at this fantastic laboratory. The need for such exposure for U.S. undergraduates has grown even more significant as many of the collider facilities in the U.S. have closed.”

–HOMER NEAL, Ph.D.
Director of the U-M CERN, REU Program
BRINGING U.S. TEACHERS TO CERN

In 2006, a new program was created to give high school physics teachers from the U.S. the opportunity each year to attend a three-week program at CERN over the summer. During their stay they take lab tours, attend lectures and work on curriculum development. They bring back new ideas, insights, and an excitement about physics to their classrooms.

The program is funded by a National Science Foundation grant to the University of Michigan and is organized by the U-M Department of Physics. The teachers are selected by QUARKNET.

NEW U-M CERN STUDY ABROAD PROGRAM

Physics majors from throughout the U.S. now have the opportunity to take part in a full semester at CERN with a format similar to our summer research experience for undergraduates. Funded by a grant from the Lounsbery Foundation, the program will be available during both the fall and winter terms for 2013-2014.

For more information, e-mail jkrisch@umich.edu.

Teachers in the High School Teacher Program touring CERN facilities.
How to Apply
Students must be registered at an accredited four-year institution, be in their junior year or senior year concentrating in physics, engineering, or computer science. The program is open to U.S. Citizens and permanent residents. Applications are available at: um-cern-reu.org

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Cover Photo
Simulation by the ATLAS experiment of the decay of a Higgs boson into 4 muons.