

**Department of Physics
COLLEGE OF Arts & Sciences**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 2, 2009

The Department of Physics is pleased to offer the following research project for the summer of 2009. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

STUDY OF CERENKOV LIGHT RADIATED BY COSMIC RAYS

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Project Description

Our group is looking for an energetic student to work in our optics laboratory making measurements of Cerenkov light radiated in a quartz bar by cosmic rays and imaged onto a set of photomultiplier tubes. We plan to construct a prototype particle detector based on this principle that could be used to identify pions and kaons in a particle physics experiment. Tasks include writing software to read out and analyze signals from the cosmic ray telescope and the array of photomultiplier tubes; writing and running simulation code (using *Mathematica* or C++) to help us understand how to optimally focus the Cerenkov light; and making measurements with the focusing mirrors and photomultiplier system.