

**Department of Physics
COLLEGE OF ARTS & SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 2, 2015

The Department of Physics is pleased to offer the following research project for the summer of 2015. 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.

**PROJECT TITLE: THE STRUCTURE AND DYNAMICS OF THE INNER
REGIONS OF PLANET-BUILDING DISKS AROUND YOUNG STARS**

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Project Description

Most stars are born with disks of material that are the building-blocks of planets. In their outer regions, these disks are composed of both solids (sub-micron to centimeter-sized dust grains of rocky and icy material) and gases. Over thousands of years, these solids and gases form planets, such as those being detected with a number of instrumental techniques today. Closer to the star, the solids evaporate, leaving a disk of only gaseous material.

As the gaseous material works its way down to the surface of the star, it is heated to high temperature, and it emits spectral lines of hydrogen whose strength are a measure of the rate of mass transfer from the disk to the star. The rate of mass transfer changes with time in a manner that is not yet understood. In this project the student will measure the line strengths as a function of time, determine the mass transfer rates, and examine possible correlations between the mass transfer rate and the structure of the inner disk material.