Illinois Wesleyan University
Digital Commons @ IWU

News and Events | Office of Communications

Spring 9-7-2012

French Leads NSF-Funded Study of Asteroids

Kim Hill
Illinois Wesleyan University

Follow this and additional works at: https://digitalcommons.iwu.edu/news

Recommended Citation
Hill, Kim, "French Leads NSF-Funded Study of Asteroids" (2012). *News and Events*. 1903.
https://digitalcommons.iwu.edu/news/1903

This Article is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.
©Copyright is owned by the author of this document.

French Leads NSF-Funded Study of Asteroids

Sept. 7, 2012

BLOOMINGTON, Ill. – Adding to the body of knowledge regarding the formation and evolution of our solar system will be the focus of a National Science Foundation (NSF)-funded study led by Illinois Wesleyan University Chair and Professor of Physics Linda M. French and involving astronomers from Georgia State University, Lowell Observatory in Arizona, and the Center for Solar System Studies in California.

Chair and Professor of Physics Linda French

The three-year award, totaling $256,451, is entitled "RUI: Photometric Survey of Jovian Trojans." The project involves a systematic study of Trojan asteroids, a large group of more than 5,000 objects sharing Jupiter's orbit around the sun. "RUI" is an acronym for "Research at Undergraduate Institutions," NSF's RUI activity supports research at predominantly undergraduate institutions.The grant will allow two Illinois Wesleyan students and a Georgia State University graduate student to travel to observatories in Arizona and Chile, plan observations and learn observing techniques, and present their findings in national conferences and in peer-reviewed journals. As principal investigator, French estimates it will take her two months each summer to complete all tasks.

French and her colleagues in the physics department have long been committed to involving undergraduate students in research. "Being on site, planning and carrying out observations, and then reducing and analyzing data, are totally different experiences to sitting in the classroom," she said. "Students learn how the *doing* of science really works. This can be both extremely exciting and intensely frustrating."

In astronomy, a Trojan is a minor planet or moon that shares an orbit with a planet or larger moon. "Trojans, in general, look a lot like the bare nuclei of comets when the comets are too far away from the sun to have a tail," explained French. "Comets live much further out in the solar system than planets and normal asteroids." One model involving the Jovian Trojans suggests that in the early days of the solar system, a barrage of comets impacted the inner solar system. "At least some of the Jovian Trojans might be relics of those comets, and some might have formed closer to where they are today," she said. A systematic study of the compositional classes of Trojans, therefore, can help determine whether or not all Trojans originated in the same place, she added.

The Jovian Trojans, due to their location at Jupiter's two stable Lagrange points, may provide clues about the history and evolution of the solar system, French explained. Lagrangian points lie 60 degrees ahead of and behind the planet in its orbit.

During the three-year photometric study, researchers will obtain 1) a complete set of broadband 4-color (BVRI) for 150 objects that can be used to distinguish the two main spectral classes of objects found among the Trojans; and 2) a bias-corrected set of rotation data for up to 100 objects. "We will search for trends in rotation period with size and compositional class, and compare our results with those for objects that could be related, such as main-belt asteroids and large outer-belt asteroids," French explained.

"Considerable research has been conducted on individual Trojans, but through our project, we'd like to be able to say whether small Trojans rotate faster or slower than big ones, and whether asteroids of a certain color (which indicates composition) rotate faster or slower than ones of a different color," French added.

She added that the name "Trojans" as applied to these heavenly bodies was derived by accident. "The first one discovered was named Achilles, after the Greek hero of the Trojan War," French explained. "The second was named after his comrade Patroclus, and the third after the Trojan hero Hektor. The group of asteroids preceding Jupiter is named after Greeks, and the group that follows is named after Trojans. By now, however, thousands have been discovered, way too many to find names in the *Iliad* and the *Aeneid*."

Contact: ***Kim Hill****, (309) 556-3960*