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# TCU Math News Letter

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*Isaac Newton said, "If I have seen farther than others, it is because I have stood on the shoulders of giants." I say, "If I have not seen as far as others, it is because there were giants standing on my shoulders."*

-- Hal Abelson

[Editor: Dr. Rhonda Hatcher](#) and [Archive of Newsletters](#)

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## TCU Research Lectureship Series

The Frank Stones Lectureship Series will feature a talk by Professor Nicholas Proudfoot of the University of Texas at Austin on Tuesday, January 31, 2006. Professor Proudfoot will present the talk "Topological and Arithmetic Methods in Combinatorics" in Tucker Technology Center 246 at 4:00 p.m. In this talk, Professor Proudfoot will survey various situations in which a combinatorially significant sequence of integers can be interpreted as the Betti numbers of an algebraic variety. Refreshments will be served before the talk in TTC-300 at 3:30 p.m.

## Summer Research Opportunities for Undergraduates

The National Science Foundation funds summer research opportunities for undergraduate students through its Research Experiences in Mathematics for Undergraduates Sites. An REU Site consists of a group of approximately ten undergraduates working in research programs at the host institution. Students are given stipends and, in many cases, assistance with housing and travel. Each site focuses on a specific area of mathematics, science, engineering, computer science, or social science.

For the summer of 2006, the National Science Foundation has funded 45 REU sites in mathematics. TCU undergraduates interested in applying to the programs will need to begin the application process soon. Some have application deadlines as early as sometime in February, and the applications typically require letters of recommendation from professors. The sites are located at universities across the country, and three, at Rice University, Trinity University, and Texas A & M, are located in Texas.

The REU programs generally run from six to eight weeks in length. The experience gained in these REU projects is particularly helpful for students considering graduate study.

Undergraduates who are interested in learning more about or applying to one of the REU projects in mathematics or some other discipline can find a link to all of NSF REU sites through the web page [www.nsf.gov/crssprgm/reu/reu\\_search.cfm](http://www.nsf.gov/crssprgm/reu/reu_search.cfm).

Programs for undergraduate women mathematics majors are being held in the summer of 2006 at Carlton College and at George Washington University. Both of these programs are for mathematically talented

undergraduate women who are contemplating graduate study in the mathematical sciences. The programs provide a stipend, housing, and a travel allowance.

The George Washington University program is intended for students finishing their junior year. Details can be found at [www.gwu.edu/~math/spwm.html](http://www.gwu.edu/~math/spwm.html). The application deadline is March 1, 2006.

The Carlton College program is intended for students who are who are currently completing their first or second year of college and have completed linear algebra. Details can be found at [www.mathcs.carleton.edu/smp/](http://www.mathcs.carleton.edu/smp/). The application deadline is February 24, 2006.

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## Solution to the November 2005 Problem of the Month

**Problem:** You have two ropes that will burn for exactly one hour each, though not necessarily at a constant rate (in length/time). Show how to measure an interval of exactly 15 minutes. (From Car Talk?)

**Solution:** If you light both ends of one rope, it will burn for 30 minutes. Light both ends of one rope and only one end of the other. When the first rope is completely burned, the second rope will have 30 minutes worth left if we just let it burn. Instead, we also light the second end and the rope will finish burning in another 15 minutes.

The November problem was solved by Jeff Rhodes.

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## February 2006 Problem of the Month

This month's problem is due to Solomon W. Golomb and came via Mark Krusemeyer. Which  $m$  by  $n$  rectangles can be tiled with an L-shaped tetromino made up of four unit squares? (The tetromino must cover the rectangle exactly with no overlap. It can be rotated and flipped.)



**Students and others are invited to submit solutions to Dr. George Gilbert (Math Dept. Office or P.O. 298900). Correct solutions submitted by persons who are not members of the TCU math faculty will be acknowledged in the next issue of the newsletter. Note that a correct solution is an answer and a justification of its correctness. The solution to the problem will be published in the next edition of the newsletter.**

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**The TCU Math Newsletter will be published each month during the academic year. Dr. Hatcher: Editor; Dr. Gilbert: Problem Editor; Dr. Doran: Thought of the Month Editor. Items which you would like to have included should be sent to Dr. Hatcher (Math Dept. Office or P.O. 298900).**