GAPS BETWEEN PRIMES AND THE JUMPING CHAMPION PROBLEM

by

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Abstract: Consider the sequence of primes: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, ... and next consider the differences or gaps between the consecutive primes: 1, 2, 2, 4, 2, 4, 2, 4, 6, 2, ... The most common difference for primes up to $x$ is called a jumping champion, so for example when $x = 19$ the jumping champion is 2. For $x > 947$ the jumping champion is always 6 as far as has been computed, currently $x = 10^{15}$. Essentially nothing has ever been proved about jumping champions. Despite this, it is conjectured that aside from 1 the jumping champions are 4 and the primorials $2, 2 \times 3, 2 \times 3 \times 5, 2 \times 3 \times 5 \times 7, 2 \times 3 \times 5 \times 7 \times 11, ...$. We will describe some theoretical support for this conjecture, and discuss some related questions about primes.

About the speaker: Dan Goldston received his B.A. (1975), M.A. (1978), and Ph.D. (1981) in Mathematics from the University of California, Berkeley. After spending a year at the University of Minnesota at Duluth and a year at the Institute for Advanced Study in Princeton, he joined the faculty of San Jose State University (SJSU) in 1983. He has been at SJSU since then except for semesters spent at the Institute for Advanced Study in 1990, the University of Toronto in 1994, and MSRI in Berkeley in 1999. He has been named the San Jose State University Presidential Scholar in 2006 and has had continuous NSF support for his research since 1987. He is especially famous for his work in 2005 with Janos Pintz and Cem Yildirim on small gaps between prime numbers, which is one of the most important breakthroughs in Analytic Number Theory. This was rated one of the top 100 science stories by Discovery Magazine for 2005.

Wednesday, January 18, 2012, at 4:15pm

Freeburg Forum (Kravis Center, LC 62), Claremont McKenna College

Refreshments at 3:45 p.m. in Freeburg Forum Courtyard & wine and cheese after the talk in CMC Math Commons Room (Adams 208)

The dinner will be hosted by Prof. Lenny Fukshaksky.
Please contact Prof. Fukshaksky if you are interested in attending the dinner