



The Math Colloquium
Department of Mathematics
San José State University



Brian Conrad
Stanford University

*Quaternions, with applications to number theory
and video games*

SEPTEMBER 9, 2009, MH320

Abstract: Hamilton invented quaternions in the 1800's as a way to do "algebra" in 4-dimensional space. Back then, there was a raging battle between those who thought that quaternions were the best language for physics and those who thought that this was completely absurd. Nowadays Hamilton's construction retains its importance as the simplest example of a non-commutative division algebra.

In this talk we'll explain what the quaternions are, why anyone cares, and how they can be used in ways that are interesting even if one knows nothing about quaternions: proving that every positive integer is a sum of 4 perfect squares, and making smooth motion in video games and flight simulators.

Background: Students should be comfortable with with vector spaces and linear maps in dimension beyond 3.

About the speaker: Brian Conrad received his Ph.D. from Princeton University, and is currently a Professor of Mathematics at Stanford University.

SNACKS IN MH331B AT 2:30 PM

TALK STARTS AT 3 PM

For more information, see our full schedule at:

<http://www.math.sjsu.edu/~hsu/colloq/>