



The Math/Stats Colloquium
Department of Mathematics and Statistics
San José State University



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You can't hear the shape of a drum

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Abstract: In spectroscopy, one attempts to recover the chemical composition of, say, a star from the characteristic frequencies of emitted light. Analogously, Mark Kac's question "Can one hear the shape of a drum?" asks whether the shape of a vibrating membrane (a drumhead) can be determined from its characteristic frequencies of vibrations (its fundamental tone and overtones). We will answer this question in the negative by constructing explicit examples of exotic shaped "sound-alike" drums. We will also listen to a simulation of their sound, developed by Dennis DeTurck of the University of Pennsylvania.

Background: A first course in linear algebra will be helpful, but is not necessary.

About the speaker: Carolyn Gordon is the Benjamin Cheney Prof. of Mathematics at Dartmouth College. She received her Ph.D. from Washington University and has previously held positions at Technion, Lehigh Univ., and Washington Univ. Her research is in Riemannian geometry, with emphasis on inverse spectral problems and on the geometry of Lie groups.

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/>