Center for Applied Mathematical Sciences
Distinguished Lecturer, Spring 2018
Joint with the Mathematics Department Colloquium

Marcelo Viana

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Random products of matrices

Abstract:

By an old theorem of H. Furstenberg and H. Kesten, the norm of a random product of d-by-d invertible matrices grows at a well-defined (i.e. almost certain) exponential rate, that we call the Lyapunov exponent.

A recent result of A. Avila, A. Eskin and myself asserts that this number depends continuously on the data, that is, on the matrix coefficients and their probability weights. For d=2 this was proven before, in my student C. Bocker´s thesis.

This behavior is in sharp contrast with some classical results of R. Mane and J. Bochi about the Lyapunov exponents of continuous linear cocycles. I´ll also discuss some moduli of continuity for the Lyapunov exponent of random matrices.

Wednesday, January 17, 2018

Kaprielian Hall

Tea: 3:00 p.m.
KAP 410

Lecture: 3:30 p.m.
KAP 414

Wine & Cheese: 4:30 p.m.
KAP 410

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Marcelo Viana's research concerns dynamical systems. He has received many honors and awards. In 1998 he was awarded the Prize from the World Academy of Sciences which recognizes excellence in research in the global South. In 2005 he was awarded the inaugural Ramanujan Prize by ICTP for his research achievements.

He is a recipient of Brazil's National Order of Scientific Merit.

In 2016 he was the joint recipient of the Le Grand Prix Scientific from the Institut de France.

Viana was the Vice-President of the International Mathematical Union (2011-2014) and the President of the Brazilian Mathematical society (2013-2015). He is Chair of the executive committee for the 2018 International Congress of Mathematicians in Rio de Janeiro.