Department of Mathematics,
University of California, San Diego
* * ** *

Math 288 - Probability & Statistics Seminar

Prof. Todd Kemp

UCSD, MIT 2009-2010

Chaos and the Fourth Moment

Abstract:

The Wiener Chaos is a natural orthogonal decomposition of the L^2 space of a Brownian motion, naturally associated to stochastic integration theory; the orders of chaos are given by the range of multiple Wiener-Ito integrals.

In 2006, Nualart and collaborators proved a remarkable central limit theorem in the context of the chaos. If X_k is a sequence of nth Wiener-Ito integrals (in the nth chaos), then necessary and sufficient conditions that X_k converge weakly to a normal law are that its (second and) fourth moments converge – all other moments are controlled by these.

In this lecture, I will discuss recent joint work with Roland Speicher in which we prove an analogous theorem for the empirical eigenvalue laws of high-dimensional random matrices.

Host: Bruce Driver

Thursday, November 5, 2009

10:00 AM

AP&M 6402

* *