PAUL SKOUFRANIS, University of California - Los Angeles
Freely Independent Random Variables with Non-Atomic Distributions

One central concept in the study of free probability is to describe the spectral distributions of non-commutative polynomials of freely independent random variables. In this talk, we will examine the spectral distributions of non-commutative polynomials of non-atomic, freely independent random variables. In particular, the construction of an analogue to the Strong Atiyah Conjecture for free groups implies that the measure of each atom of any $n \times n$ matricial polynomial of non-atomic, freely independent random variables is an integer multiple of n^{-1}. In addition, we will show that the distribution of any matricial polynomial of freely independent semicircular variables has an algebraic Cauchy transform and thus is real-analytic except at a finite number of points. This is joint work with D. Shlyakhtenko.