

# Unité de probabilités

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[EPFL](#) > [Faculté SB](#) > [IMA](#) > [PROB](#) & [PRST](#) > [Séminaires](#) > Prof. Steven N. Evans - Mardi 19 mai 2009  
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## Conférence en probabilité

Mardi 19 mai 2009 16h00  
[MA A1 12](#), EPFL, Ecublens

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## Eigenvalues of large random trees

### Résumé

A common question in evolutionary biology is whether evolutionary processes leave some sort of signature in the shape of the phylogenetic tree of a collection of present day species. Similarly, computer scientists wonder if the current structure of a network that has grown over time reveals something about the dynamics of that growth. Motivated by such questions, it is natural to seek to construct "statistics" that somehow summarise the shape of trees and more general graphs, and to determine the behaviour of these quantities when the graphs are generated by specific mechanisms.

The eigenvalues of the adjacency and Laplacian matrices of a graph are obvious candidates for such descriptors. I will discuss how relatively simple techniques from linear algebra and probability may be used to understand the eigenvalues of a very broad class of large random trees. These methods differ from those that have been used thusfar to study other classes of large random matrices such as those appearing in compact Lie groups, operator algebras, physics, number theory, and communications engineering.

This is joint work with Shankar Bhamidi (U. of British Columbia) and Arnab Sen (U.C. Berkeley).

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