

Probability Seminar

Organizer: Jomy Alappattu & Elchanan Mossel & Sebastien Roch

Wednesday, 3:10–4:00pm, 332 Evans

Nov. 1 **Sebastien Roch**, Berkeley

Broadcasting on trees: on the tightness of a bound of Kesten and Stigum

I will consider the problem of reconstructing the root value of a broadcasting process on a tree, where each edge is a noisy channel. A well-known result of [Kesten, Stigum'66] guarantees the feasibility of such reconstruction under a condition on the second eigenvalue of the channel. In recent work with Borgs, Chayes, and Mossel, we showed that this condition is tight for binary channels, as long as the channel is not too far from symmetric. This is the first exact result of this kind since the solution of the symmetric case by [Bleher, Ruiz, Zagrebnov'95]. I will sketch the proof and discuss applications in phylogenetic reconstruction and mixing times of Glauber dynamics on trees.