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The independence polynomial of the random tree

The independence polynomial of a graph is not in general well-behaved — Alavi et al. showed, for example, that its coefficient sequence can exhibit arbitrary patterns of rises and falls. For some restricted families, things are much nicer — Hamidoune, for example, showed that for claw-free graphs the coefficient sequence is log-concave.

Open since 1987 is the question (due to Alavi et al.) of whether trees and forests have independence polynomials with log-concave coefficient sequences. I'll report on some recent work around this problem, joint with Abdul Basit, where we focus on the independence polynomial of the random tree.