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Burning and covering random trees

Graph burning is a discrete-time process on a graph, where vertices are either burning or not. In each round, a burning vertex causes all of its neighbours to burn, and one new fire is started at a chosen vertex. The process runs until all vertices are burning. The main quantity of interest is the burning number, which is the minimum number of rounds required to burn all vertices of the graph. The problem of upper bounding the burning number of various large families of graphs has been a popular topic in recent years.

In this talk, we will discuss bounds on the burning numbers of random trees (specifically size-conditioned Bienaymé trees). The bounds are a consequence of a law of large numbers for the covering numbers of random trees across various scales, which will be the main focus.

The talk is based on joint work with Simon Briend, Serte Donderwinkel, and Elaine Herrera.