A limit law for the most favorite point of a simple random walk on a regular tree

Abstract:

We consider a continuous-time random walk on a regular tree of finite depth and study its favorite points among the leaf vertices. We prove that, for the walk started from a leaf vertex and stopped upon hitting the root, as the depth of the tree tends to infinity the maximal time spent at any leaf converges, under suitable scaling and centering, to a randomly-shifted Gumbel law. The random shift is characterized using a derivative-martingale like object associated with square-root local-time process on the tree. Joint work with Marek Biskup (UCLA).