EXTREMA OF LOGARITHMICALLY CORRELATED PROCESSES

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Logarithmically correlated processes form an emergent family of stochastic processes whose overall behavior depends strongly on their both local and global correlation structures. Examples include branching random walks and Brownian motion, Gaussian Free Field in two dimensions, the membrane model in four dimensions, the local time of the two dimensional simple random walk, metric properties of random triangulations, random models of the Riemann zeta functions, etc. Much of recent interest in these processes has focused on various extremal questions; for instance, the distributional limit of their maxima or the scaling limit of large level sets, a.k.a. thick points, etc. The lecture will give an introduction to these questions and explain, at least in broad terms, how such extremal properties can be controlled mathematically.