

Probability Seminar
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November 15, 2018

A 2-SLE $_{\kappa}$, $\kappa \in (0, 8)$, is a pair of random curves (η_1, η_2) in a simply connected domain D connecting two pairs of boundary points such that conditioning on any curve, the other is a chordal SLE $_{\kappa}$ curve in a complement domain. We prove that, for the exponent $\alpha = \frac{(12-\kappa)(\kappa+4)}{8\kappa}$, for any $z_0 \in D$, the limit $\lim_{r \rightarrow 0^+} r^{-\alpha} P[\text{dist}(\eta_j, z_0) < r, j = 1, 2]$ converges to a positive number, called the two-curve Greens function. To prove the convergence, we transform the original problem into the study of a two-dimensional diffusion process, and use orthogonal polynomials to derive its transition density and invariant density.

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