
SLE and Liouville Quantum Multifractality

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Abstract

We describe some recent advances in the study of the fundamental coupling of a canonical model of random paths, the Schramm-Loewner Evolution (SLE), to a canonical model of random surfaces, Liouville Quantum Gravity (LQG). The latter is expected to be the conformally invariant continuum limit of various models of random planar maps. Via the KPZ relation the multifractal spectra of planar SLE morph into natural quantum analogues in LQG. We make this explicit for extreme nesting in the Conformal Loop Ensemble (CLE) in the plane and on a random planar map, and for the SLE joint harmonic measure and winding multifractal spectrum. The latter directly reflects the conformal welding structure of so-called quantum wedges along SLE paths.

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