CONFORMALLY INVARIANT RANDOM PROCESSES

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We will survey and explain a recent theory describing precisely the scaling limits of many random systems in two dimensions. Random paths associated with each of these systems are believed to converge to a path among a one-parameter family of random fractal curves called stochastic Loewner evolution (or SLE). Several instances of this statement have been proven, for example, critical percolation on the triangular grid and loop-erased random walks, while others are still conjectural, e.g., the Ising and Potts models and the self-avoiding walk. The theory is useful, mainly because the SLE description facilitates explicit calculations of properties of the scaling limits.