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**Efficient SLE algorithms and numerical pitfalls of the method**[1]

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We consider a physical experiment or a numerical simulation of a physical phenomena that produces a random family of two-dimensional curves. We would like to know if there is a conformal invariance underlying this stochastic geometry. The Schramm-Loewner evolution (SLE) is a conformally invariant stochastic process which depends on a single parameter $\kappa$. For different values of $\kappa$ it is known to describe the scaling limit of many conformally invariant 2d systems, e.g, percolation, the Ising model, self-avoiding walks and many more. So it is a natural candidate for describing the stochastic geometry of other physical systems. The classical Loewner equation provides a correspondence between curves in the plane and "driving functions," and SLE is obtained by taking the driving function to be a Brownian motion. Given a collection of random curves in the plane one would like to determine if the curves come from an SLE process for some value of $\kappa$. One method is to compute the driving processes of the curves and test if they are a Brownian motion. We discuss algorithms for doing this efficiently and some of the pitfalls in this approach.

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