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Stochastic Loewner evolution driven by Lévy processes ILIA RUSHKIN, University of Chicago, PANAGIOTIS OIKONOMOU, University of Chicago, LEO KADANOFF, University of Chicago, ILYA GRUZBERG, University of Chicago — Standard stochastic Loewner evolution (SLE) is driven by a continuous Brownian motion, which then produces a continuous fractal trace. If jumps are added to the driving function, the trace branches. We consider a generalized SLE driven by a superposition of a Brownian motion and a stable Lévy process. The situation is defined by the usual SLE parameter, κ, as well as α which defines the shape of the stable Lévy distribution. The resulting behavior is characterized by two descriptors: p, the probability that the trace self- intersects, and $\tilde{p}$, the probability that it will approach arbitrarily close to doing so. These descriptors are shown to change qualitatively and singularly at critical values of κ and α. These transitions occur as κ passes through four (a well-known result) and as α passes through one (a new result). Numerical simulations are then used to explore the associated touching and near-touching events.

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