SLE AND α-SLE DRIVEN BY LÉVY PROCESSES

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Abstract: Schramm Loewner Evolutions (SLE) are random planar curves (if $\kappa \leq 4$) or growing compact sets generated by a curve (if $\kappa > 4$). We consider more general Lévy processes as the driving processes which give increasing clusters with trees-like structure. We show that when the driving force is of the form $\sqrt{\kappa}B + \theta^{1/\alpha}S$ for a Brownian motion B and a symmetric α-stable process S, the cluster has zero or positive Lebesgue measure according to whether $\kappa \leq 4$ or $\kappa > 4$. Due to the different scale invariant properties between Brownian motion and symmetric α-stable processes, we introduce a new class of evolutions called α-SLE. The corresponding clusters have α-self-similarity. We show the phase transition at a critical coefficient $\theta = \theta_0(\alpha)$ analogous to the $\kappa = 4$ phase transition in Brownian SLE. This talk is based on a joint work with Matthias Winkel.