There is only a 1-parameter family indexed by $k > 0$ of random curves going from one fixed point on the boundary of a planar domain to another and satisfying a

conformal Markov property.

(Usually we take the domain to be the upper half plane, and the pts to be 0 & $\infty$)

Loewner's thm

$$2g_t(z) = \frac{2}{g_t(z) - W_t}$$

SLE$_k$: The $Y_t$ you get by taking $W_t$ to be

$$B_{kt} = \sqrt{k} B_t$$

($B$: Brownian motion)

Properties:

SLE$_k$ is a.s. not self-intersecting if $k \in (0,4)$

If $4k < 8$ SLE$_k$ is self-bounding
If $4k < 8$, $SLE_k$ is self-bounding.
If $k > 8$, $SLE_k$ is space-filling.