

# Random walks, Kleinian groups, and bifurcation currents

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(Submitted on 5 Nov 2010)

Let  $(\rho_\lambda)_{\lambda \in \Lambda}$  be a holomorphic family of representations of a finitely generated group  $G$  into  $\mathrm{PSL}(2, \mathbb{C})$ , parameterized by a complex manifold  $\Lambda$ . We define a notion of bifurcation current in this context, that is, a positive closed current on  $\Lambda$  describing the bifurcations of this family of representations in a quantitative sense. It is the analogue of the bifurcation current introduced by DeMarco for holomorphic families of rational mappings on the Riemann sphere. Our definition relies on the theory of random products of matrices, so it depends on the choice of a probability measure  $\mu$  on  $G$ .

We show that under natural assumptions on  $\mu$ , the support of the bifurcation current coincides with the bifurcation locus of the family. We also prove that the bifurcation current describes the asymptotic distribution of several codimension 1 phenomena in parameter space, like accidental parabolics or new relations, or accidental collisions between fixed points.

Subjects: **Geometric Topology (math.GT)**; Complex Variables (math.CV); Dynamical Systems (math.DS)

Cite as: [arXiv:1011.1365v1](#) [math.GT]

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