

1100-37-167

Johannes Jaerisch* (jaerisch@cr.math.sci.osaka-u.ac.jp), Osaka University, Department of Mathematics, Graduate School of Science, 1-1 Machikaneyama, Toyonaka, Osaka, 560-0043 Japan, and **Hiroki Sumi** (sumi@math.sci.osaka-u.ac.jp), Osaka University, Department of Mathematics, Graduate School of Science, 1-1 Machikaneyama, Toyonaka, Osaka, 560-0043 Japan.
Multifractal analysis of limit state functions in random complex dynamical systems.

We consider the dynamics of semigroups of rational maps on the Riemann sphere and random complex dynamical systems. Under certain conditions, in the limit stage of a transition operator associated with a random complex dynamical system, a complex analogue of a devil's staircase function appears ([Hiroki Sumi: Random complex dynamics and semigroups of holomorphic maps, Proc. London Math. Soc. (1) (2011), no. 102, 50-112]). In this talk, we employ the multifractal formalism in ergodic theory to investigate the spectrum of the Hölder exponents of these functions. More precisely, we are able to relate the Hausdorff dimension of points with a prescribed Hölder exponent to dynamical properties of the semigroup. In this way, we obtain a refined gradation between chaos and order in random complex dynamical systems. (Received February 07, 2014)