

Ergodic Theory and Geometry of Transcendental Meromorphic Functions

Mariusz Urbanski
University of North Texas

The Julia sets of Transcendental Meromorphic Functions will be defined and their basic properties will be discussed. The class of hyperbolic meromorphic functions will be singled out. The Hausdorff, packing and conformal measures will be introduced and their mutual relations will be established. The Patterson-Sullivan method, the fixed point method, and the tightness method of constructing conformal measures will be described. Their advantages and limitations will be discussed. As the crucial tool, the change of Riemannian metric method used to control the iterates of transfer operators will be discussed at length. Ahlfors property of some conformal measures will be established. Following analogy with Kleinian groups the radial Julia sets will be introduced and Bowen's formula identifying the Hausdorff dimension of these sets with zeros of the pressure function will be established. A version of the classical variational principle for topological pressure will be formulated and uniqueness of equilibrium states will be proved. It will be also shown that the equilibria coincide with naturally defined Gibbs states. Essentially all discussed concepts and theorems will be compared with their counterparts for rational functions of the Riemann sphere.