Teichmüller Structures and Dual Geometric Gibbs Type Measure Theory for Continuous Potentials

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Abstract

The Gibbs measure theory for smooth potentials is an old and beautiful subject and has many important applications in modern dynamical systems. For continuous potentials, it is impossible to have such a theory in general. In this talk, I will present a dual geometric Gibbs type measure theory for certain continuous potentials following some ideas and techniques from Teichmüller theory for Riemann surfaces. Furthermore, we will show that the space of those continuous potentials has a Teichmüller structure. Moreover, this Teichmüller structure is a complete structure and is the completion of the space of smooth potentials under this Teichmüller structure. Thus our dual geometric Gibbs type theory is a completion of the Gibbs measure theory for smooth potentials from the dual geometric point of view.

Keywords: Circle endomorphism, Symbolic space, Dual symbolic space, Dual derivative (Scaling Function), Dual Gibbs measure, Quasisymmetic homeomorphism, Symmetric homeomorphism