

Abstract

Harmonic maps play a central role in Teichmüller theory. It was conjectured by Schoen and proved by Marković that every quasisymmetric homeomorphism of the circle admits a quasiconformal harmonic extension to the disk. Together with related works, notably by Li-Tam and Wan, this yields a parametrization of the universal Teichmüller space in terms of bounded holomorphic quadratic differentials. On the other hand, the Weil-Petersson Teichmüller space forms an important subspace of the universal Teichmüller space which is equipped with a natural complete Kähler structure, and has been extensively studied in recent years. In this talk, we study Weil-Petersson circle homeomorphisms via quasiconformal harmonic maps. We show in particular that square-integrable holomorphic quadratic differentials parametrize the Weil-Petersson Teichmüller space, and that the anti-holomorphic energy of the harmonic extension satisfies a suitable energy-minimizing property among quasiconformal extensions. This talk is based on joint work with Farid Diaf, and Vladimir Marković.