Geometry of Riemann Surfaces

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Speaker: Yunping Jiang, City University of New York.

Title: An Overview of Quasiconformal and Tame Quasiconformal Motion Theory.

Abstract: The concept of quasiconformal motion was introduced by Sullivan and Thurston in their 1986 paper, building upon the notion of holomorphic motion. They initially claimed that any quasiconformal motion of a subset in the Riemann sphere over an interval could be extended to a quasiconformal motion of the entire Riemann sphere over the same interval. However, a counterexample presented in Jiang-Mitra-Shiga-Wang's 2018 paper challenged this assertion. As a result, a new concept known as tame quasiconformal motion emerged. Furthermore, the assertion becomes a theorem that any tame quasiconformal motion of a closed subset in the Riemann sphere over a simply connected Hausdorff space can indeed be extended as a quasiconformal motion of the Riemann sphere over the same simply connected Hausdorff space. The fundamental idea behind this development is to establish the Teichmuller space of a closed subset in the Riemann sphere as a universal parameter space. The presentation begins with a brief review of holomorphic motions theory and then proceeds to define both quasiconformal motion and tame quasiconformal motion. A concise outline of the proof for the counterexample is provided, followed by an overview of the proof demonstrating the extension of a tame quasiconformal motion over a simply connected Hausdorff space. This talk aims to provide a comprehensive understanding of the intriguing concepts and results within the realm of quasiconformal and tame quasiconformal motion theory.