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The Geometry of Q-curvature

- from a perspective of Riemannian geometry

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Abstract

As a generalization of Gaussian curvature on surfaces, Q-curvature plays a fundamental role in the study of the geometry of 4-dimensional manifolds. Due to its natural connection with conformal structure, Q-curvature was studied extensively as a conformal geometric object during the past decades. In this talk, we will present some different perspectives beyond the conformal ones to characterize the geometry involving Q-curvature. This reveals a series of fundamental connections about Q-curvature among conformal geometry, Riemannian geometry and topology. This talk is mainly based on a series of works joint with Yueh-Ju Lin in Wichita State University and Jeffrey Case in Pennsylvania State University.