

Quasisymmetric Maps—a Geometrical View

Jang-Mei Wu

University of Illinois at Urbana-Champaign

Abstract

Quasisymmetric maps are natural generalizations of conformal maps and quasiconformal maps to metric spaces. The theory of such maps has recently found applications in geometric analysis, complex dynamics and geometric group theory. However a large number of fundamental questions remain unanswered, for example

- Quasisymmetric parametrization of a metric space by a Euclidean space,
- Factorization of quasisymmetric maps into maps of small distortion,
- Extension of quasisymmetric maps to the ambient spaces.

In this course, we will start from the definition, explain geometric properties of these maps and give a survey of known results. We then discuss open questions. In order to reduce some of the technical issues, we bring in a large number of examples from geometric topology to illustrate the underlying problems in dimensions 3, 4 and 5.

The course is intended to be self-contained.