



Analysis Seminar

Title: Fractal spheres, visual metrics, and rational maps

Speaker: Daniel Meyer (Liverpool)

Date: Tue 1st November 2022 at 4:00PM

Location: Seminar Room SCN 1.25

Abstract: Quasisymmetric maps map ratios of distances in a controlled way. They generalize conformal maps. The quasisymmetric uniformization theorem asks if a certain metric space is quasisymmetrically equivalent to some model space. Of particular interest in this context is the question to characterize quasispheres, i.e., metric spaces that are quasisymmetrically equivalent to the standard 2-sphere. A simple class of fractal spheres are “snowballs”, which are topologically 2-dimensional analogs of the van Koch snowflake curve. A Thurston map is a topological analog of a rational map (i.e., a holomorphic self-map of the Riemann sphere). Thurston gave a criterion when such a map “is” rational. Given such a map f that is expanding, we can equip the sphere with a “visual metric”. With respect to this metric, the sphere is a quasisphere if and only if f “is” rational.

This is joint work with Mario Bonk (UCLA).

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