Mathematics, Statistics, and Computer Science   **@ UIC**

Geometry, Topology and Dynamics Seminar

Holomorphic quadratic differentials on graphs

Wai Yeung Lam (Brown University)

Abstract: In the classical theory, holomorphic quadratic differentials are tied to a wide range of objects, e.g. harmonic functions, Teichmueller space, dynamical systems and minimal surfaces. We present a discretization of holomorphic quadratic differentials that preserves such a rich theory.

We introduce discrete holomorphic quadratic differentials on graphs. There arise naturally from dynamical systems, circle packings and energy minimization. We will discuss their connection to discrete conformal geometry and the surface theory. On one hand, they relate discrete harmonic functions, circle packings and Luo's vertex scaling. On the other hand, they unify discrete minimal surfaces via a Weierstrass representation formula. Further problems will be shown in the end of the talk.

Note special time and location.

Monday, December 3 at 2:00 PM in 612 SEO