

PERSPECTIVES OF THE RICCI FLOW

Feb. 28, 2013, 9:30am - 3:30 pm

Science Center, Room 4102

Graduate Center, CUNY

Schedule:

- 9:30 - 10:30 Coffee
- 10 am - 11 am: David Glickenstein (Arizona)
- 11:15 am - 12:15 pm: Ioana Suvaina (Vanderbilt)
- 12:15 pm - 1:15 pm: Lunch break
- 1:15 pm - 2:15 pm: Jian Song (Rutgers)
- 2:30 pm - 3:30 pm: Dan Knopf (Texas)
- 3:30 pm - 4:30 pm: Discussion

Title and Abstract:

1. David Glickenstein:

Title: Problems in combinatorial and numerical Ricci flow

Abstract: Combinatorial Ricci flow was introduced by Chow and Luo as an analogue of Ricci flow on circle packings and related discrete conformal structures (as formulated by Thurston). By numerical Ricci flow, we refer to actual methods of numerically calculating an approximation of Ricci flow, often by standard PDE methods such as finite differences and finite elements. We will review some what is known about combinatorial and numerical Ricci flows and some of what is not known. Some questions are unique to combinatorial or numerical Ricci flows (or related flows), while some also inspire interesting (and difficult) questions about Ricci flow on smooth Riemannian manifolds (and possible extension to manifolds with boundary). One particular issue is how diffeomorphism invariance manifests in the combinatorial/numerical setting.

2. Ioana Suvaina:

Title: On normalized Ricci flow and smooth structures on 4-manifolds

Abstract: There is a strong relation between the existence of non-singular solutions for the normalized Ricci flow and the underlying smooth structure of a 4-manifold. We are going to discuss an obstruction to the existence of non-singular solutions and its applications. The main examples are connected sums of complex projective planes and complex projective planes with reversed orientation. The key ingredients in our methods are the Seiberg-Witten Theory and symplectic topology. This is joint work with M. Ishida and R. Rasdeaconu.

3. Jian Song:

Title: Kahler-Ricci flow and birational surgery

Abstract: In this talk, we relate the Kahler-Ricci flow to the minimal model program in birational geometry. We prove that the Kahler-Ricci flow performs high codimensional contractions in Gromov-Hausdorff topology for projective manifolds. In particular, we construct flips by the Kahler-Ricci flow for a family of projective bundles over CP^n .

4. Dan Knopf:

Title: Type-II singularities of Ricci flow

Abstract: We will discuss recent progress (by the speaker and collaborators) in determining what rates of finite-time singularity formation are possible for either compact or noncompact solutions of Ricci flow, and in constructing degenerate neckpinch solutions with prescribed asymptotic behaviors.

Organizers:

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