GEOMETRIC ANALYSIS SEMINAR

"Uniqueness of closed self-similar solutions to the Gauss curvature flow "

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Abstract: Uniqueness of strictly convex closed self-shrinkers to curvature flows are related C^2 and pinching estimates. In particular, the uniqueness and the C^2 estimates solutions can be obtained in similar ways for fully nonlinear concave flows.

The Gauss curvature flow is not a concave flow, but in the two dimension case, the optimal C^{1,1} regularity yields the uniqueness. However, in higher dimensions, the optimal regularity is C^{1,1/(n-1)}, and the uniqueness had remained unsolved.

In this talk, we will study the free boundary problem in the Gauss curvature flow to settle the uniqueness in the higher dimensions. Moreover, we improve the Porogelov computation by using the viscosity solutions, in order to classify the closed self-shrinkers of the power Gauss curvature flow, where the power is greater than or equal to 1/(n+2). The critical power 1/(n+2) comes from the affine geometry.

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