Math 258 - Differential Geometry

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Nonlocal curvature flows of closed curves in the plane

Abstract:
We first talk about Gage’s area-preserving flow (GAPF) for simple, smooth and star-shaped curves. It is shown that GAPF drives a centrosymmetric initial curve into a circle as time tends to infinity. Then we generalize GAPF to deform one convex curve to another. This work gives a partial answer to Yau’s problem on realizing Whitney-Graustein Theorem via curvature flows.

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