

The Chern Flow

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Abstract

We propose a flow over kaehlerian manifolds.

1 Kaehlerian manifolds

The Kaehler manifolds are complex manifolds with compatible riemannian metrics in the sense that the complex structure is parallel by the Levi-Civita connection of the metric.

2 Einstein manifolds

For the Kaehler manifolds, the Einstein equations are expressed as:

$$\omega = tr(R_J)$$

ω is the symplectic form and R_J is the twisted riemannian curvature. The Ricci flow is:

$$\dot{\omega} = tr(R_J)$$

3 The Chern flow

The Chern characteristic classes are:

$$c_k = tr(R^k)$$

The Chern flow over a Kaehler manifold is defined as:

$$\dot{\omega} \wedge \omega = tr(R^2)$$

R is the Riemann curvature. More generally, we can define the flows:

$$\dot{\omega} \wedge \omega^k = tr(R^{k+1})$$

4 Bibliography

J.Jost, "Riemannian Geometry and Geometric Analysis", Springer, Berlin, 2008.