Lagrangian mean curvature flow in (almost) Calabi-Yau manifolds

Given a Calabi-Yau n-fold M with holomorphic volume form Ω there is a distinguished class of submanifolds, called special Lagrangian submanifolds. These are n-dimensional submanifolds of M, which are calibrated with respect to $\mathrm{Re}\,\Omega$. Special Lagrangian submanifolds have received a lot of attention because of their connection to mirror symmetry (Strominger-Yau-Zaslow conjecture, see [4]). Calibrated submanifolds are automatically minimal submanifolds, so a natural attempt to construct them is by using mean curvature flow.

In this talk we first introduce Calabi-Yau manifolds and special Lagrangian submanifolds following Joyce [2]. Afterwards we show how to prove the existence of the Lagrangian mean curvature flow in (almost) Calabi-Yau manifolds following [1] and Smoczyk [3].

References

[1] T. Behrndt, 'Lagrangian mean curvature flow in almost Kähler-Einstein manifolds', preprint, math.DG/0812.4256.

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[3] K. Smoczyk, 'A canonical way to deform a Lagrangian submanifold', preprint, dg-ga/9605005.

[4] A. Strominger, S.-T. Yau, E. Zaslow, 'Mirror symmetry is T-duality', Nuclear Phys. B 479 (1996), no. 1-2, 243–259.