Workshop on Geometric Evolution Equations
Atelier sur les équations géométriques d'évolution
16–27 April/*Avril*, 2008

The Calabi-Yau equation on symplectic manifolds

Valentino TOSATTI
Department of Mathematics
Harvard University
One Oxford Street
Cambridge, MA 02138
USA

tosatti@math.harvard.edu

Abstract

We consider the problem of prescribing the volume form of a symplectic form compatible with a given almost-complex structure on a compact symplectic manifold. When the complex structure is integrable, and the manifold is therefore Kaehler, this is the celebrated Calabi conjecture that was solved by Yau 30 years ago. Donaldson has recently conjectured that in dimension 4 the equation is still solvable, and has shown that this would have striking consequences in symplectic topology. In a joint work with Ben Weinkove and Shing-Tung Yau we show that the necessary a priori estimates can be reduced to an integral estimate of a scalar function, and that the conjecture holds under a positive curvature condition.