

PhD course – Spring 2016

Complex Geometry

Description: Complex geometry studies the geometry of complex manifolds. A complex manifold is a differentiable manifold endowed with the additional datum of a complex structure which is much more rigid than the geometrical structures in differential geometry. Mostly, interesting complex manifolds are the ones equipped with special Riemannian metrics. This leads to Kähler manifolds, and a large part of the course is devoted to techniques for the investigation of this prominent type of complex manifolds.

The course will start from basic of complex manifolds, Kähler manifolds and sheaf theory. Two main goals will be introducing Riemann-Roch theorem and Hodge theory.

Instructor: Jørgen Ellegaard Andersen and Qiongling Li

Schedule: We meet twice a week. Each time is two hours.

Reference:

- (1) Differential Analysis on Complex Manifolds, R.O.Wells
- (2) Hodge Theory and Complex Algebraic Geometry I, Claire Voisin