CHAMPP
CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Summer Term 2021

Kähler Geometry

Vicente Cortés

Course Description:

The notion of what is today known as a Kähler manifold was introduced by Erich Kähler in the article *Über eine bemerkenswerte hermitesche Metrik*, Abhandlungen Math. Seminar Universität Hamburg 9 (1933), 173–186. Since then, Kähler geometry has grown into a highly developed research area at the confluence of complex geometry, Riemannian geometry and symplectic geometry. It is not only central to mathematics but also of great relevance as a mathematical structure in quantum theories. The lecture course will provide a systematic introduction to the theory of Kähler manifolds as well as many examples.

Prerequisites:

Solid background in differential geometry and basic knowledge of holomorphic functions.

Literature:

Course material will be accessible in STiNE, including links for the recorded lectures and the online tutorials. Please contact us in case you are a member of QURS not eligible to a STiNE account. Standard references about complex manifolds and, more specifically, Kähler manifolds (including smooth complex algebraic varieties) are:
- W. Ballmann, *Lectures on Kähler manifolds*.
- P. Griffiths, J. Harris, *Principles of algebraic geometry*.
- D. Huybrechts, *Complex geometry – an introduction*.
- A. Moroianu, *Lectures on Kähler manifolds*.
- R. O. Wells, *Differential analysis on complex manifolds*.

Date and Place:	Tue 12:15–13:45, Thu 10:15–11:45 (recorded)
Problem Classes:	Wed 16:15–17:45, BigBlueButton
Starting on:	6 April 2021