LTCC Advanced Course

Title: Birational Geometry

Basic Details:
- Core Audience: 1st or 2nd year PhD Students (e.g., students who are just starting in LSGNT)
- Course Format: Extended: 5 x 2hr lectures

Course Description:
- Keywords: Birational Geometry, Rational Curves, Foliations
- Syllabus: A repeating theme in birational geometry is the study of the existence or non-existence of rational curves on a given variety. The study of these rational curves is often connected to the study of other important geometric features of the variety, e.g., hyperbolicity properties, existence of fibrations, etc. We will begin with a tour of some classical aspects of the Minimal Model Program (for instance, what is covered in Kollar-Mori) before turning to some more modern techniques in the study of rational curves on varieties using foliations (for instance, Campana-Paun).

- Recommended reading: ``Birational Geometry of Algebraic Varieties`` - Kollar, Mori; ``Foliations with positive slopes and birational stability of orbifold cotangent bundles``- Campana, Paun; ``Rational curves on Foliated varieties`` - Bogomolov, McQuillan
- Additional Optional reading: To be announced
- Prerequisites: This makes a good follow on to a first course in algebraic geometry (at the level of Hartshorne for instance).

Format:
- Electronic lecture notes: Notes will be given out after the corresponding lecture

Lecturer Details:
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