

LTCC Advanced Pure Course

Title: The Cremona Group

Basic Details:

- Core Audience (1styr or 2nd/3rdyr: pure, app. or stats): Pure
- Course Format (extended or intensive): Extended

Course Description:

- Keywords:
- Syllabus:

The Cremona group in two dimensions is the group of birational automorphisms of the projective plane over some fixed field. This course intends to describe how hyperbolic geometry and geometric group theory have led to the recent proof by Cantat and Lamy that this group is not simple, as an abstract group. We also intend to discuss related topics, inspired by the fact that certain contemporary encryption algorithms are Cremona transformations.

Recommended reading: Hartshorne, ch V, SS. 1 and 3, for a description of intersection theory and blowing up points on an algebraic surface.

Prerequisites: Some understanding of the geometry of the hyperbolic plane would be useful.

Format:

- Lecture/computer session/tutorial/discussion split (hours of each): 5 lectures

Lecturer Details:

- Lecturer: Professor Nicholas Shepherd-Barron
- Lecturer home institution: KCL