Arithmetic Geometry Workshop
supported by EPSRC Progamme grant Symmetries and Correspondences

University of Nottingham
14-08-2019

Room: C05, physics building

Schedule:

- 10:30-11:30   R. de Jong
- 11:45- 12:45   P. Dolce

- Lunch break

- 14:00-15:00   A. Minamide
- 15:15-16:15   W. Porowski

Titles and abstracts:

R. de Jong. Second moments of polarized abelian varieties, and applications.

We introduce the notion of second moment of a polarized abelian variety defined over a complete discretely valued field. We discuss in detail the case of jacobians, where the second moment can be computed explicitly and efficiently in terms of a Berkovich skeleton of the underlying curve (which is a metric graph aka a tropical curve). In arithmetic intersection theory, the second moment features in a formula relating the stable Faltings height of a principally polarized abelian variety over the field of algebraic numbers with the Neron-Tate height of a symmetric theta divisor on that abelian variety. We intend to discuss this formula, and to mention some applications. Joint work with Farbod Shokrieh.

P. Dolce. Adelic geometry on arithmetic surfaces.

After briefly introducing the theory of 2-dimensional local fields and their topologies, we define the ring of adeles on an arithmetic surface completed with the fibres at infinity. We show that as topological group it is self-dual. Moreover fundamental adelic subspaces are self orthogonal with respect to a natural differential pairing, this result can be thought as a stronger version of the arithmetic 2-dimensional reciprocity laws. Joint work with W. Czerniawska.

A. Minamide. Explicit estimates in inter-universal Teichmüller theory (in progress)

Roughly speaking, the main theorem of inter-universal Teichmüller theory consists of a "computation" of the "arithmetic Teichmüller deformations of a number field equipped with an elliptic curve" by applying various anabelian results. As an application, we obtain a diophantine

inequality. In this talk, I will explain our recent joint work that aims to obtain an explicit/effective version of the diophantine inequality. Joint work with Ivan Fesenko, Yuichiro Hoshi, Shinichi Mochizuki, and Wojciech Porowski.

W. Porowski. Anabelian reconstruction of the Neron-Tate height function.

Let X be an elliptic curve over a local field of characteristic zero punctured at one point. Consider the etale fundamental group of X and splittings of the homotopy exact sequence arising from the rational points of X. In the talk we describe how those splittings determine the values of the Neron-Tate local height function on the original set of rational points.