

## **GLEN seminar**

**Liverpool, Friday 3 February 2017**

13:00 Roberto Fringuelli (Edinburgh)

*The Picard group of the universal moduli space of vector bundles on stable curves.*

*In this talk, we present the moduli stack of properly balanced vector bundles on semistable curves and we determine explicitly its Picard group. As a consequence, we obtain an explicit description of the Picard groups of the universal moduli stack of vector bundles on smooth curves and of the Schmitt's compactification over the stack of stable curves. We show some results about the gerbe structure of the universal moduli stack over its rigidification by the natural action of the multiplicative group. In particular, we give necessary and sufficient conditions for the existence of a universal family of an open substack of the rigidification. In the remaining time, we discuss some consequences for the associated moduli varieties.*

14:15 Liana Heuberger (Imperial)

*Fano varieties, general elephants and classification*

*We start by giving a short overview on the classification of Fano varieties. The smooth case is known up to dimension three, and we discuss the role that the general elephant, i.e. a general divisor  $D$  in  $| -K_X |$ , plays in this classification. We state the problem and current advances in dimension four. We then investigate what happens if we allow the Fano variety to have mild singularities and why this makes sense in the bigger picture of classification of algebraic varieties.*

16:00 Jeffrey Giansiracusa (Swansea)

*Tropical geometry and algebra over idempotent semirings*

*Tropical geometry is a tool that can reduce problems in algebraic geometry to piecewise polyhedral geometry and combinatorics, but it is also a new world of geometry in its own right. In this talk I will introduce the emerging picture of this kind of geometry as parallel to Grothendieck's vision of algebraic geometry. Here rings are replaced by idempotent semirings, and the role of linear algebra in classical commutative algebra is replaced by the combinatorics of matroids.*