GLEN seminar - University of Edinburgh, Thursday 10 December 2015

Programme:

13:10 **Ghislain Fourier** (Glasgow)
Toric degenerations of flag varieties arising from representation theory

I will introduce a general framework for toric degenerations of flag varieties which are motivated by structures from representation theory. For this I will introduce birational sequences and the associated essential monoids. This framework covers the toric degenerations obtain through Lusztig's PBW bases, the string polytopes dues to Littelmann and Berenstein-Zelevinsky as well as recently defined degenerations in the framework of PBW degenerate modules. We will see how this new setup will eventually lead to "new" toric degenerations.

14:30 **Kevin Tucker** (UIC)
Rationality of the F-Pure Threshold in Power Series Rings

The F-pure threshold is a positive characteristic invariant of singularities, and can be thought of as an analog of the log canonical threshold in characteristic zero. Indeed, these two invariants share many properties in common, and are known to relate to one another through reduction to characteristic $p > 0$. In this talk, I will describe recent work with K. Schwede showing the rationality of the F-pure thresholds of ideals in power series rings.

16:00 **Martina Lanini** (Edinburgh)
Moment graph combinatorics for semi-infinite flags

*Given a (nice enough) complex projective algebraic variety X, equipped with an algebraic torus action, the associated moment graph (i.e. the 1-skeleton of this action) encodes all the information one needs to determine the equivariant cohomology and intersection cohomology of X. This allowed, for example, to translate into combinatorics the study of certain geometric properties of flag varieties and their Schubert varieties. The semi-infinite flag variety is an affine variant of the flag variety, *widely infinite*, for which, a priori, it is not possible to apply moment graph techniques. In this talk we will explain how a certain graph we discovered enables to compute local intersection cohomology of the semi-infinite flag variety. This provides a first step towards extending moment graph techniques to this semi-infinite setting.*

All talks take place in JCMB 6206.