GLEN seminar

Glasgow, Friday 1 September 2017

13:00 Ben Davison (Glasgow)

The cohomological Donaldson-Thomas invariants for noncommutative local P^2

I will introduce some recent advances in cohomological DT theory, which form part of joint work with Sven Meinhardt. I'll illustrate some of this new theory by explaining how it sheds new light on an ongoing project with Balazs Szendroi to understand (and try to prove!) general positivity and reducibility statements regarding the Donaldson-Thomas invariants of local P^2.

14:15 Soheyla Feyzbakhsh (Edinburgh)

Reconstructing a K3 surface form a curve via wall-crossing.

Ciliberto, Lopez and Miranda proved that a general K3-section of high enough genus lies on a unique K3 surface and Mukai introduced a geometric program to reconstruct this K3 surface using a Brill-Noether locus on the curve. I will explain how wall-crossing with respect to Bridgeland stability conditions implies that the Mukai's strategy works for a general curve of genus greater than 12 or genus 11.

16:00 Andrea Appel (Edinburgh)

Monodromy of the Casimir connection

Let g be a complex semisimple Lie algebra, h its Cartan subalgebra, and V a finite–dimensional representation. The Casimir connection of g is a flat connection with logarithmic singularities, defined on the holomorphically trivial vector bundle with fiber V over the regular Cartan, that is the complent in h of the hyperplane arrangement corresponding to the root system of g. We show that the monodromy of the Casimir connection is *encoded by the axiomatic of the Coxeter categories (which is similar in flavor to the associativity and commutativity constraints in a monoidal category, but is related to the coherence of a family of fiber functors) and is computed by the quantum Weyl group operators of the quantum group U (g). This provides a generalised version of the Drinfeld-Kohno theorem describing the monodromy of the Knizhnik-Zamoldchikov equations in terms of the universal R–matrix of U (g).*