

Artin Groups and Hecke Algebras

June 28 – June 29, 2018

Program

Thursday

- 13:30 *Welcome*
- 14:00 – 14:50 **Donna Testermann** (Lausanne)
Overgroups of regular unipotent elements, finite and algebraic.
- 15:00 – 15:50 **Kay Magaard** (Arizona)
Permutation groups with low fixity
Coffee Break
- 16:15 – 17:10 **Cédric Bonnafé** (Montpellier)
Finite reflection quotients of braid groups and blow-ups
20 :00 conference dinner at the “Vert Galant”

Friday

- 08:45 *Coffee*
- 09:00 – 09:50 **Götz Pfeiffer** (Galway)
A Matrix Model of the Double Burnside Algebra
- 10:10 – 11:00 **Jérémie Guilhot** (Tours)
On Lusztig’s conjectures P1-P15 in affine Hecke algebras
11h15 defense of the PhD thesis of Alexandre Esterle

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Abstracts

Cédric Bonnafé (Montpellier)

Title : Finite reflection quotients of braid groups and blow-ups

Abstract : If B_W is the braid group associated with a finite complex reflection group W acting on a space V , it may admit “abstract” quotients W' which are also complex reflection groups. Starting from some blow-up of the variety $(V \times V^*)/W$, we propose a conjectural construction whose topological underlying structure should allow to view both W and W' as “natural” quotients of B_W .

Jérémie Guilhot (Tours)

Title : On Lusztig's conjectures P1-P15 in affine Hecke algebras.

Abstract : This is a joint work with J. Parkinson (University of Sydney). The aim of this talk is to introduce the notion of a balanced system of cell representations in affine Hecke algebras and to explain how the existence of such a system can be used to study Lusztig conjectures P1–P15 about cells in the unequal parameter case. We will then describe explicitly a balanced system in the case of the affine Hecke algebra of type G2 : the construction is purely combinatorial and uses an analogue of positively folded alcoves walk.

Kay Magaard (Arizona)

Title : Permutation groups with low fixity

Abstract : Let k be a natural number, G a transitive permutation group with permutation domain Ω . We say that G has fixity k on Ω if some $g \in G$ has exactly k fixed points on Ω and all other nonidentity elements have k or fewer fixed points. Groups with fixity 1 are Frobenius groups. In this talk we consider the structure of groups with fixity at most 4.

Götz Pfeiffer (Galway)

Title : A Matrix Model of the Double Burnside Algebra

Abstract : In contrast to the (ordinary) Burnside ring $B(G)$, the double Burnside ring $B(G, G)$ of a nontrivial finite group G is not commutative and a general theory of the structure of $B(G, G)$ remains elusive.

As a first step towards such a theory, I'll describe a relatively small faithful matrix representation of the rational double Burnside algebra $\mathbb{Q}B(G, G)$. The construction is based on a recent decomposition of the table of marks of the direct product $G \times G$. This is joint work with Sejong Park. .

Donna Testermann (Lausanne)

Title : Overgroups of regular unipotent elements, finite and algebraic

Abstract : We briefly discuss some background material on connected reductive overgroups of regular unipotent elements in simple algebraic groups, as well as the general question of when lifting an embedding of a finite quasisimple group to an appropriate embedding of connected groups is possible, recalling results of Liebeck and Seitz. We then discuss our joint work with Tim Burness on $\mathrm{PSL}_2(p)$ subgroups of exceptional algebraic groups defined over an algebraically closed field of characteristic p , under the condition that the subgroup intersects the class of regular unipotent elements. This work is part of the larger problem of determining the maximal $\mathrm{PSL}_2(q)$ subgroups of the finite exceptional groups, as considered in recent work of Craven.