Complex Reflection Groups and their Braid Groups

25 et 26 juin 2018

Programme

Lundi 25 juin

13h30 accueil

14h00 - 15h00: **Jean Michel** (IMJ, Paris VII), *Combinatoire de Deligne-Lusztig: compter les décompositions d'un élément de Coxeter en réflexions.*

15h20 - 16h20**: Ruth Corran** (AUP, Paris), *Presentations for wreath products with monoids related to braids.*

16h20 - 16h50 *pause.*

16h50 - 17h50: **Filippo Callegaro** (Univ. Pise, Italie), *Cohomology of superelliptic families and complex braid groups.*

Mardi 26 juin

09h30 - 10h30: **François Digne** (LAMFA, Amiens), *Longueur dans les groupes de réflexions.*

10h30 - 11h00: *pause.*

11h00 - 12h00: **Jon McCammond** (UCSB, Santa-Barbara, USA), *Boundary Braids and the Dual Braid Complex.*

Résumés/abstracts

Jean Michel (IMJ, Paris VII), *Combinatoire de Deligne-Lusztig: compter les décompositions d'un élément de Coxeter en réflexions.*

Le travail de David Bessis sur le K(**π,**1) de l'espace de configuration associé à un groupe de réflexion bien engendré nécessite de compter le nombre de décompositions d'un élément de Coxeter en réflexions, ce qui n est connu que cas par cas. Un travail de Chapuy et Stump donne une version élégante de ce comptage (toujours cas par cas) en utilisant une identité de Frobenius en théorie des caractères.

Je montre comment transformer leur preuve en preuve uniforme pour tous les groupes de Weyl en utilisant la "combinatoire de Deligne-Lusztig", qui fait ressembler tous les groupes de Weyl au type A.

Ruth Corran (AUP, Paris), *Presentations for wreath products with monoids related to braids.*

Let **G** be a monoid or group obtained from the vine monoid or braid group by taking the quotient by a normal subgroup of pure braids, and **M** any monoid. We describe presentations for the wreath product of **M** with the symmetric group, the braid group, *the vine* monoid on n strings,... (among others), obtained by adding a single copy of the generators of **M** and a single copy of the relations of **M** along with relations describing the wreathing. We then introduce the *contracted* wreath product, and presentations of the contracted wreath product of a monoid with the symmetric group, the braid group, the vine monoid on n strings, \dots are described. Examples of the monoids obtained by such wreath products include the imprimitive complex reflection groups in the family G(m,1,n), framed braids and generalisations of them; examples of monoids obtained by the contracted wreath product construction include *the symmetric inverse semigroup* and the related *inverse braid semigroup*. This is joint work with David Easdown and Tim Lavers.

Filippo Callegaro (Univ. Pise, Italie), *Cohomology of superelliptic families and complex braid groups*

We show that the family E_n^d of superelliptic curves, consisting of d-fold coverings of the disc ramified over n distinct points, is a classifying space for the complex braid group of type B(d,d,n). By generalizing some methods which we used before, we study the monodromy of the associated bundle, the integral cohomology of these groups and their stability, funding in some cases explicit Poincaré series. Joint work with Mario Salvetti.

François Digne (LAMFA, Amiens), *Longueur dans les groupes de réflexions.*

Jon McCammond (UCSB, Santa-Barbara, USA), *Boundary Braids and the Dual Braid Complex.*

In any Coxeter group, the conjugates of elements in its Coxeter generating set are called reflections and the reflection length of an element is its length with respect to this expanded generating set. In this talk I will give a simple formula that computes the reflection length of any element in any affine Coxeter group and also describe a simple uniform proof. This is joint work with Joel Lewis, Kyle Petersen and Petra Schwer.