

# Program of the workshop

Reims 20-21 June 2018

Wednesday 20th		Thursday 21st	
10h30-11H20	Jérémie Guilhot	10h-10h50	Eirini Chavli
11h30-12H20	Anne-Laure Thiel	11h-11h50	Jacinta Torres
12h20-14h	Lunch	12h-	Lunch
14h-14H50	Ruari Walker		
15h-15H50	Maria Chlouveraki		
16h30-17H20	Eugenio Giannelli		

- EIRINI CHAVLI (UNIVERSITÄT STUTTGART).  
**Title:** Modular representation theory for the generic Hecke algebras on 3 strands.  
**Abstract:** In 2011, M. Chlouveraki and H. Miyachi worked on Cyclotomic Hecke algebras for  $d$ -Harish-Chandra series of rank 2 and they provided the decomposition matrices associated with every specialization. They proved that it is enough to examine the case where the parameter defined the associated Hecke algebra is specialized to a root of unity. At this stage, a number of questions arise. Why do these values given to the parameter provide different decomposition matrices? Are there more matrix models for the Cyclotomic case outside the  $d$ -Harish-Chandra series? What happens in the generic case? In this talk we will answer all these questions for the generic Hecke algebras on three strands.
- MARIA CHLOUVERAKI (UNIVERSITÉ DE VERSAILLES).  
**Title:** The BMM symmetrising trace conjecture for Hecke algebras .  
**Abstract:** Exactly twenty years ago, Brou, Malle and Rouquier published a paper in which they associated to every complex reflection group two objects which were classically associated to real reflection groups: a braid group and a Hecke algebra. Their work was further motivated by the theory, developed together with Michel, of "Spetses", which are objects that generalise finite reductive groups in the sense that their associated Weyl groups are complex reflection groups. The four of them advocated that several nice properties of braid groups and Hecke algebras generalise from the real to the complex case, culminating in two main conjectures as far as the Hecke algebras are concerned: the "freeness conjecture" [BMR] and the "symmetrising trace conjecture" [BMM]. The two conjectures are the

cornerstones in the study of several subjects that have flourished in the past twenty years, but had remained open until recently for the exceptional complex reflection groups. In the past five years, the proof of the "freeness conjecture" was completed for all exceptional complex reflection groups. In this talk, we will discuss our proof of the "symmetrising trace conjecture" for the first five exceptional groups. This is joint work with Christina Boura, Eirini Chavli and Konstantinos Karvounis.

- EUGENIO GIANNELLI (CAMBRIDGE UNIVERSITY).  
**Title:** Character correspondences for symmetric and complex reflection groups.  
**Abstract:** In 2016 Ayer, Prasad and Spallone proved that the restriction to  $S_{n-1}$  of any odd degree irreducible character of  $S_n$  has a unique irreducible constituent of odd degree. This result was later generalized by Isaacs, Navarro Olsson and Tiep. In this talk I will survey some recent developments on this topic.
- JÉRÉMIE GUILHOT (UNIVERSITÉ DE TOURS).  
**Title:** Balanced system of cell representations in affine Hecke algebras.  
**Abstract:** 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. We will then describe explicitly a balanced system in the case of the affine Hecke algebra of type G2. This is a joint work with J. Parkinson (University of Sydney).
- ANNE-LAURE THIEL (UNIVERSITÄT STUTTGART).  
**Title:** On some generalizations of the category of Soergel bimodules.  
**Abstract:** The category of Soergel bimodules plays an essential role in (higher) representation theory and for the construction of homological invariants in knot theory. The aim of this talk is to present a generalization of Soergel category attached to a Coxeter group of type  $A_2$ . While Soergel category counts a generating bimodule per simple reflection, this generalization is obtained by taking one generator per reflection. I will give a complete description of this category through a classification of its indecomposable objects and study its split Grothendieck ring. This gives rise to an algebra which is a quotient of the corresponding affine Hecke algebra of type  $A_2$ , that can be presented by generators and relations. This is joint work with Thomas Gobet..
- JACINTA TORRES (KARLSRUHE INSTITUTE FOR TECHNOLOGY).  
**Title:** Branching rules and bijections.  
**Abstract:** We give a review of certain existing branching rules for the representations of classical Lie algebras, their connections, and shine light on work to be done. We will focus on the possible connection between the work of Sundaram and Jae-Hoon Kwon. There will be a lot of tableaux combinatorics.

- RUARI WALKER (UNIVERSITÉ DE PARIS VII).

**Title:** Affine Hecke algebras and generalisations of quiver Hecke algebras for type B.

**Abstract:** Cyclotomic Hecke algebras are certain finite-dimensional quotients of affine Hecke algebras of type A. Brundan and Kleshchev proved that blocks of cyclotomic Hecke algebras are isomorphic to certain finite-dimensional quotients of quiver Hecke algebras, known as cyclotomic quiver Hecke algebras. In particular, this shows that cyclotomic Hecke algebras have a non-trivial grading. In this talk I will construct certain finite-dimensional quotients of affine Hecke algebras of type B, introduce a family of graded algebras which will play the role of the cyclotomic quiver Hecke algebra, and discuss a result analogous to that of Brundan and Kleshchev's; these finite-dimensional quotients of affine Hecke algebras of type B are isomorphic to cyclotomic quiver Hecke algebras for type B. This is joint work with Loic Poulain d'Andecy (University of Reims), arXiv:1712.05592v2.