

### **Charlotte Chan**

Title: Deligne--Lusztig Constructions for p-adic Groups and the Local Langlands Correspondence

Abstract: In 1979, Lusztig proposed a cohomological construction of supercuspidal representations of reductive p-adic groups, i.e. a p-adic analogue of the classical Deligne--Lusztig theory for finite reductive groups. We prove that this conjectural construction indeed gives rise to supercuspidal representations of division algebras and furthermore gives a geometric realization of the local Langlands and Jacquet--Langlands correspondences (LLC and JLC).

Precisely, let  $D$  be the non-split quaternion algebra over a local non-Archimedean field  $K$  of positive characteristic, and let  $X$  be the  $p$ -adic Deligne--Lusztig ind-scheme associated to  $D^\times$ . Then, after a mild restriction of the domain and target, the natural correspondence between characters of the (multiplicative group of the) unramified quadratic extension of  $K$  and representations of  $D^\times$  given by  $\theta \mapsto H_i(X)_{\theta}$  matches the one given by the LLC and JLC.

### **Galyna Dobrovolska**

Finite Local Systems in the Drinfeld-Laumon Construction

### **Rita Fioresi**

Title of poster: Supersymmetric spaces

Abstract: we want to discuss the highest weight representations of the  $(\mathfrak{g}_r, \mathfrak{k}_r)$  pair consisting of  $\mathfrak{g}_r$ , a real form of a complex Lie superalgebra of classical type  $\mathfrak{g}_{r,0}$ , and the maximal compact subalgebra  $\mathfrak{k}_r$  of  $\mathfrak{g}_{r,0}$ .

These representations will be concretely realized through spaces of holomorphic vector bundles on the associated Hermitian superspaces.

### **Lena Gal**

Title: Symmetric self-adjoint Hopf categories and a categorical Heisenberg double

Abstract provided in .pdf

### **Johanna Hennig**

Representation Theory of Diagonal Lie algebras

### **Jacinta Perez Gavilan Torres**

Title: Plactic Equivalence and MV cycles

Abstract: There are many constructions of the crystal  $B$  associated to an irreducible representation of a complex connected reductive algebraic group. For classical types there are 'key' tableaux constructions, and for types A, B, and C they have been connected explicitly to the path model. On the geometric side, the MV (Mirkovic-Vilonen) cycles involved in the geometric Satake equivalence have been given a crystal structure by Braverman-Gaitsgory, providing thus a construction of  $B$ . The connection between the two constructions has been made explicit by Gaussett-Littelmann for LS tableaux (in higher generality), which correspond in type A to semi-standard Young tableaux. They realise the latter as torus fixed points in a Bott-Samelson resolution of a generalised Schubert variety in which the MV cycles are contained. The closure of the image under this resolution of the corresponding Bialynicki Birula cell is an MV cycle, and the map is a morphism of crystals (Baumann-Gaussett).

In type A, the result has been generalised to all keys by Gaussett-Littelmann-Nguyen and partially by us, and in type C we have defined a more general class of 'readable' keys for which the image of the associated cell is an MV cycle, and for which the correspondence yields a morphism of crystals. We do this using plactic relations and word reading!

**Shifi Reif**

Title: Character formulas for the general linear Lie superalgebra

Abstract: In 1994 Kac and Wakimoto conjectured an elegant Weyl-type closed character formula for a certain class of simple finite dimensional modules over basic Lie superalgebras. This formula was shown to be applicable in number theory and in the theory of vertex algebras. We present the progress in character theory of Lie superalgebras which led to the proof of the Kac-Wakimoto formula for the general linear Lie superalgebra and its generalization to a bigger class of modules, namely the piecewise disconnected modules. Joint with Michael Chmutov and Crystal Hoyt.