Michel Broué

Quelques souvenirs subjectifs au sujet de Serge Bouc

Ivo dell'Ambrogio

On the origins of classical Green functors

Abstract : In this talk I will introduce the notion of Green 2-functor, which categorifies that of an ordinary Green functor. For instance, the tensor categories of representations over a fixed field but for varying finite groups, together with all restriction, induction and conjugation functors between them, form a (global) Green 2-functor. One could equally well take the derived or stable module categories instead, and there are examples beyond linear representatio theory in geometry and topology. I will explain two essentially different "decategorification" procedures for producing, at industrial scale, ordinary Mackey and Green functors out of a Green 2-functor. In particular, it turns out that all classical examples of Green functors from algebra and topology arise in either way from some underlying naturally occurring Green 2-functor.

Antonio Díaz

Path partial groups

Abstract : (joint work with R. Molinier and A. Viruel) We introduce a construction that associates a partial group to a graph. Partial groups consist of a set with an operation defined on a subset of all possible tuples. As a consequence, we prove that every group can be realized as the automorphism group of a partial group and we solve the Kahn realizability problem in the category of simplicial sets.

Caroline Lassueur

On the Trivial Source Character Tables of Finite Groups

Abstract : The aim of this talk is to review results obtained towards the calculation of trivial source character tables of "small" finite groups, and the creation of a database of such tables.

Bob Oliver

Realizability and tameness of fusion systems

Abstract : A saturated fusion system over a finite p-group S is a category whose objects are the subgroups of S and whose morphisms are injective homomorphisms between the subgroups satisfying certain axioms. A saturated fusion system $\mathcal{F}$ over S is realizable if there is a finite group G with Sylow p-subgroup S such that the morphisms in $\mathcal{F}$ are exactly those induced by conjugation in G. A component of a saturated fusion system $\mathcal{F}$ is a subnormal fusion subsystem that is quasicentric. I will describe recent work with Carles Broto, Jesper Møller, and Albert Ruiz, where we showed that a saturated fusion system $\mathcal{F}$ is realizable if there is a normal, realizable subsystem $\mathcal{E}$ normal in $\mathcal{F}$ that contains all components of $\mathcal{F}$. Another result is that every realizable fusion system $\mathcal{F}$ is tame; i.e., realizable by a finite group that has "just as many" automorphisms as $\mathcal{F}$ (to be made precise). Stated in such terms, these results depend on the classification of finite simple groups, but I will also give more precise statements whose proofs are independent of the classification.

Götz Pfeiffer

Parabolic Normalizers as Subdirect Products

Abstract : Motivated by Serre's recent discussion of involution centralizers in finite Coxeter groups, we review and refine the description of normalizers of parabolic subgroups. This is joint work work G. Roehrle and J.M. Douglass.

Sune Reeh

Transfers for free loop spaces of finite groups

Abstract : For a finite group G, the free loop space of BG can be modelled algebraically as a disjoint union of centralizers for each of the conjugacy classes of elements in G. It is straightforward to establish the free loop space $\mathcal{L}(-)$ as a functor on group homomorphisms and transfer maps, by modelling these as right-free bisets. However, it turns out that the transfer maps for $\mathcal{L}(-)$ do not commute with the evaluation map $\mathcal{L}(BG) \times S^1 \to BG$ for any non-trivial inclusion of subgroups. In this talk, we will construct a "twisted" version of $\mathcal{L}(-)$ for which the evaluation map becomes a natural transformation on all right-free bisets, and we will see how this "twisted" $\mathcal{L}^\dagger(-)$ relates to/differs from the naive functor $\mathcal{L}(-)$.

Baptiste Rognerud

Examples of fractionally Calabi-Yau posets.

Abstract : The incidence algebra of a finite poset over a field has a global dimension bounded by the size of the poset. As a consequence, its bounded derived category has a so-called Serre functor. A poset is called fractionally Calabi-Yau if some power of this Serre functor is isomorphic to a shift. The easiest examples come from orientations of Dynkin diagrams of type A, D and E but we will also see more complicated examples coming from Catalan combinatorics and representation theory.

Nadia Romero

Green biset functors, ten years after.

Abstract: I will make an overview of some important results about Green biset functors that have emerged in the last ten years.

Peter Symonds

The Module structure of a Group Action on a Ring

Abstract : Consider a finite group G acting on a graded Noetherian k-algebra S, for some field k of characteristic p ; for example S might be a polynomial ring. Regard S as a kG-module and consider the multiplicity of a particular indecomposable module as a summand in each degree. We show how this can be described in terms of homological algebra and how it is linked to the geometry of the group action on the spectrum of S.

Jacques Thévenaz

About a fully faithful embedding

Abstract : A correspondence functor is a linear representation of the category of finite sets and correspondences between finite sets. For any finite lattice T, there is an associated correspondence functor F_T and this turns out to produce a fully faithful embedding from a suitable category of finite lattices to the category of correspondence functors. Consequently, one can exploit results about finite lattices to obtain properties of correspondence functors. In particular, some idempotent endomorphisms of T produce remarkable direct summands of F_T. This is joint work with Serge Bouc.

Peter Webb

Bisets and correspondences

Abstract : Bisets and correspondences have some similarities, in that they are defined in terms of a pair of objects in a category, and can be taken to be morphisms between those objects in a second category. The study of biset functors, and of correspondence functors, is then the study of the representations of these categories. We describe a connection between the two constructions, providing a pair of embeddings of the correspondence category in the biset category. We examine the properties of these embeddings.

Ergün Yalçın

Higher limits over the fusion orbit category

Abstract : For a saturated fusion system $\mathcal{F}$ over a finite p-group S, the classifying space $B\mathcal{F}$ can be defined to be the p-completion of the geometric realization of the associated centric linking system $\mathcal{L}$. There are homology decompositions for $B\mathcal{F}$ similar to the mod-p homology decompositions for the classifying space BG of a finite group G. The subgroup decomposition for $B\mathcal{F}$ over the collection of all $\mathcal{F}$-centric subgroups is said to be sharp if certain higher limits over the centric orbit category $\mathcal{O}^c(\mathcal{F})$ vanish. It is an open problem whether for every saturated fusion system $\mathcal{F}$, the subgroup decomposition for $B\mathcal{F}$ is sharp. I will present some results related to this problem. In particular we show that the subgroup decomposition for every fusion system is sharp, if it is sharp for every fusion system with nontrivial center.

Deniz Yılmaz

Functorial equivalence of blocks of finite groups

Abstract : Let k be an algebraically closed field of positive characteristic $p > 0$ and let $\mathbb{F}$ be an algebraically closed field of characteristic 0. In this talk we first introduce the category of diagonal p-permutation functors over $\mathbb{F}$ and show that it is semisimple. We also give a parametrization of its simple objects, together with a description of their evaluations.
Next, to any pair (G, b) of a finite group G and a block idempotent b of kG, we associate a diagonal p-permutation functor and find its decomposition as a direct sum of simple functors. This leads to a characterization of nilpotent blocks in terms of their associated functors.
Finally, for such pairs (G, b) of a finite group and a block idempotent, we introduce the notion of functorial equivalence over $\mathbb{F}$ and we prove a finiteness theorem in the spirit of Puig's finiteness conjecture. We also give a sufficient condition for two pairs (G, b) and (H, c) to be functorially equivalent over $\mathbb{F}$ in the situation of Broué's abelian defect group conjecture. This is joint work with Serge Bouc.

Alexander Zimmermann

Clifford theorem for orbit categories

Abstract : Clifford's theorem in group representations gives information on decomposability of modules which are induced from a normal subgroup. We consider pairs of adjoint functors between orbit cateogries and show a result in this spirit.