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ABSTRACT

The Brauer Minimal Model Program

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We will describe the outcomes of a recent AIM workshop organised by Daniel Chan, Colin Ingalls, Sándor Kovács and myself. Our objective was to extend the Brauer Minimal Model Program (Brauer MMP) to dimension 3, building on the work of Daniel Chan and Colin Ingalls on the Brauer MMP in dimension 2. In this talk, I will give an overview of the Brauer MMP in dimension 2 and indicate to what extent these results generalise to higher dimensions. If time permits, I will also discuss some open problems.

Quantum symmetry for some quantum projective spaces

Alexandru Chirvasitu

University of Washington, USA

AS-regular algebras are non-commutative analogues of smooth projective schemes, with those of global dimension four behaving in many ways like three-dimensional projective space. In this talk I will introduce a specific family of such algebras and study the phenomenon whereby a quantum group acts on each algebra in the family.

The quantum group action gives rise to autoequivalences of the category of (graded) modules that do not come from genuine algebra automorphisms. This then helps in classifying certain well-behaved modules that play the role of line bundles over the quantum projective space.

Automorphism on the category of quasi-coherent sheaves for an Azumaya algebra

Cris Negron

University of Washington, USA

I will discuss quite a bit of background related to the following question: suppose A is a sheaf of Azumaya algebras on a scheme X . Then do the derived Picard groups of A and X agree? The answer to this question is no. I will provide an easy counter-example and, hopefully, motivate a conjecture about the form of $\mathrm{DPic}(A)$ via an analysis of the auto-equivalences of $\mathrm{Qcoh}(A)$.

Frobenius-Schur indicators for near group fusion categories and Gauss sums

Henry Tucker

University of Southern California, USA

Ng and Schauenburg generalized the classical Frobenius-Schur indicator for finite group representations to the setting of pivotal categories. In the case of the Tambara-Yamagami categories it was shown by Basak and Johnson that these indicators are Gauss sums for some associated pre-metric groups. The near groups are categories with fusion rules generalized from Tambara-Yamagami that fall into two classes. In the first class all but finitely many may be realized as representations of an affine general linear group of degree 1 over a finite field; in this case I provide a closed-form expression of the F-S indicators. In the second class the indicators again arise as Gauss sums of certain pre-metric groups; I will report on progress toward providing a similar expression of these indicators.

On classification of Majid algebras

Yu Ye

University of Science and Technology of China, China

In this talk I will discuss the classification problem for Majid algebras, and dually, quasi-hopf algebras. More specifically, a complete classification of finite dimensional connected graded pointed Majid algebras of rank 2 will be given.

Calculating the discriminant for non-commutative polynomial algebras

Alexander Young

University of Washington, USA

The discriminant of a field extension is an important invariant over automorphism. By defining an analogous discriminant for non-commutative polynomial algebras over a field, one can produce a similar invariant. In some cases, this allows a full description of the automorphism group.