ALGEBRA SEMINARS

An introduction to fusion systems, Alperin's Weight Conjecture, Linckelmann's Gluing Conjecture, part 1.

By

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Abstract: One aim of p-local finite group theory, arguably, is to get rid of the particular arbitrary famous finite group G and to retain only general p-local structure, perhaps partially expressed though categories whose objects are to be finite p-groups. In plain group theory, we consider the p-subgroups and the transports between them effected by conjugations. Sylow's Theorem allows us to localize, reducing to a consideration of morphisms between subgroups of a fixed Sylow p-subgroup. In block theory, the p-subgroups are replaced by the more general notion of a Brauer pair. Applying an analogue of Sylow's Theorem, the role of the Sylow p-subgroups is performed by p-subgroups called the defect groups. We can reduce to a category called the fusion system, whose objects are the subgroups of the defect group. Alperin's Fusion Theorem motivates a confinement of attention to only those objects that are called centric.

But the invariants appearing in Alperin's Conjecture are not invariants of the fusion system. After Kuelshammer and Puig, we capture the desired local information by assigning, to each centric object, a twist of the automorphism group over the unit group of the coefficient field, we mean, a central extension that is well-defined up to canonical isomorphism. Near the end of part 1 or the start of part 2, we shall illustrate the centric fusion system and its twists by means of an illuminating example, the Sylow-defect p-blocks of SL(3, p), where the prime p is congruent to 1 modulo 3.

Date: November 5, 2018
Time: 10:40 – 11:50
Place: SA141 Mathematics Seminar Room

* Tea and cookies will be served before the talk. All are most cordially invited.