Algebra and Number Theory Seminar

Title: The automorphism group of binary self–dual type II codes

Speaker: Annika Guenther (Aachen)

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Location: Mathematical Sciences Seminar Room

Abstract: Self–dual binary codes are of particular interest in algebraic coding theory, and have many practical applications. The best error–correcting self–dual binary codes have the additional property of being doubly–even (or Type II), which means that the weight of every codeword, i.e. the number of its nonzero entries, is a multiple of 4. In constructing these codes, it is often helpful to consider their automorphism groups. For a binary code C of length n, its automorphism group is

$$Aut(C) := pi in Sym_n, ; |; C pi = C,$$

where Sym_n is the symmetric group on n points. This talk presents a recent result, which says that the automorphism group of a binary self–dual Type II code of length n is always contained in the alternating group Alt_n. Moreover, given a subgroup $G le Sym_n$, sufficient conditions on G will be given such that G is contained in the automorphism group of a binary self–dual Type II code.