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Brauer-Kuroda Relations for Higher Class Numbers

Arising from permutation representations of finite groups, Brauer-Kuroda relations are relations between Dedekind zeta functions of certain intermediate fields of a Galois extension of number fields. Taking $s = 0$, these relations then provide a correspondence between class numbers of the corresponding fields, whereas for totally real Galois extensions, $\zeta_F(1-n)$ at $n \geq 2$ instead gives relations between orders of certain motivic cohomology groups. In this talk, we consider Brauer-Kuroda relations at negative odd integer values of s, wherein we shall see that they can be used to compute these orders for fields of large degree, even outside the capabilities of SAGE.