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THE BROUÉ INVARIANT OF A p -PERMUTATION EQUIVALENCE

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Abstract

Let G and H be finite groups and let B and C be p -block algebras of G and H , respectively. In a landmark paper, Broué defined the notion of a perfect isometry I between B and C as a bijection between their irreducible characters with signs satisfying certain arithmetic conditions. He proved that the ratio of the codegrees of corresponding irreducible characters (including the sign) leads to a nonzero element $\beta(I)$ in the field with p elements which is independent of the irreducible characters. We call $\beta(I)$ the Broué invariant of I and show that if I comes from a p -permutation equivalence or a splendid Rickard equivalence between A and B then - up to a sign - it is independent of the equivalence and explicitly determined by local invariants of B and C .

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