Robert Boltje* (boltje@ucsc.edu). On the Broué invariant of a $p$-permutation equivalence.

In the 1980s Broué introduced the notion of a perfect isometry between two $p$-blocks of finite groups and conjectured that if a block $B$ has abelian defect groups then there exists a perfect isometry between $B$ and its Brauer correspondent. Roughly speaking, a perfect isometry between two arbitrary blocks $A$ and $B$ is a bijection with signs between the sets of their irreducible characters, having additional $p$-arithmetic properties. Broué showed that the ratio of codegrees of corresponding irreducible characters (including signs) is a unit in the $p$-localized integers and is constant when viewed as unit in the prime field with $p$ elements. In general, this Broué invariant can take any value. We show that if a perfect isometry comes from a $p$-permutation equivalence then the value of its Broué invariant is explicitly determined by local data. As an application we obtain a theorem that links Broué’s abelian defect group conjecture with a strong form of Alperin’s weight conjecture. (Received August 20, 2019)