

Abstract

An algebraic approach to subsets in association schemes from finite buildings

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When the automorphism group G of a finite building acts generously transitively on the objects of one type (i.e. for every two elements ω_1, ω_2 , there is some $g \in G$ such that $\omega_1^g = \omega_2$ and $\omega_2^g = \omega_1$), it induces a (symmetric) association scheme. Many of these schemes are in fact q -analogues of well known association schemes, like the Johnson scheme, the binary Hamming scheme, the 24-cell,...

We consider some of the association schemes related to finite buildings and apply techniques introduced by Delsarte to obtain bounds on cliques and to describe properties of those cliques meeting the bound. We also find algebraic characterizations of subsets, similar to those for the classical t -designs in the Johnson scheme.