
ALFRED WASSERMANN, Department of Mathematics

Construction of q -analogs of Steiner systems

The notion of t -designs and Steiner systems has been extended to vector spaces by Cameron and Delsarte in the 1970s. In projective geometry, q -analogs of Steiner systems are called (s, r) -spreads. Metsch (1999) conjectured that q -analogs of Steiner systems do not exist for $t \geq 2$. Here, we show how we constructed the first examples of $S_2[2, 3, 13]$ q -analogs of Steiner systems. For the search we prescribed the normalizer of a Singer cycle as automorphism group and solved the resulting system of Diophantine linear equations. This is joint work with M. Braun, T. Etzion, P. Östergård, and A. Vardy.