

DEPARTMENT OF MATHEMATICS
IOWA STATE UNIVERSITY

Fall 2009 Algebraic Combinatorics Seminar Schedule

Time: Thursday 3:10 - 4:00

Place: Carver 196

This is a weekly informal working seminar on topics in algebraic combinatorics between Oktay and I. We report our research findings and read relevant journal articles of our interest together. For the rest of this semester, we are going to study association schemes that are coming from transitive permutation groups, among the classical groups, on various sets of classical geometries. Whoever interested in any topics posted in this page are welcome to join our discussion.

Oct. 22 **Parameters of m -flat association schemes**

Abstract. An m -flat association scheme, denoted $\mathcal{X}(X_n(m))$, is defined on the set of affine m -flats, the cosets of an m -dimensional subspace of an n -dimensional vector space over the finite field \mathbb{F}_q . This association scheme was introduced by Zhu and Li in “A construction of association schemes with several association classes and of PBIB designs using m -flats in finite affine geometries,” [*Acta Math. Appl. Sinica* **20**(1), 155-158, 1997.] This association scheme is known to be imprimitive and gives rise to a quotient scheme that is isomorphic to the q -analogue Johnson scheme $J_q(n, m)$. Its character table was calculated by Kurihara recently. Kurihara obtained the character table from that of $J_q(n, m)$ by studying the relationship between the parameter sets of two association schemes. We are computing the parameters and reconstruct the character table of $\mathcal{X}(X_n(m))$.

Oct 29 **Character tables of m -flat association schemes.**

Nov 12 **Association schemes obtained from the action of $PGL(n, q)$ on non-incident projective point-line pairs.**

Nov 19 **Association schemes obtained from the action of $PGL(n, q)$ on non-incident projective point-line pairs.**