

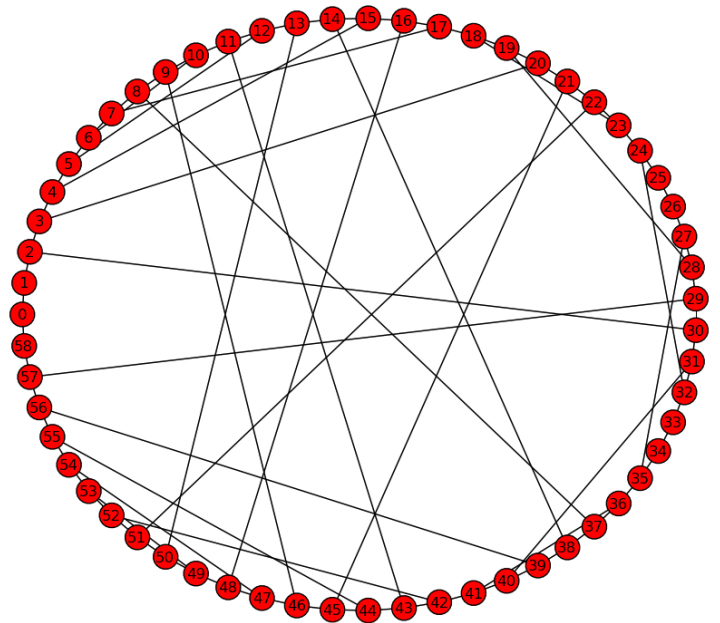
The Oliver Club

www.math.cornell.edu/~oliver/

Alex Lubotzky, Hebrew University of Jerusalem

Arithmetic Groups, Ramanujan Graphs and Error Correcting Codes

While many of the classical codes are cyclic, a long standing conjecture asserts that there are no 'good' cyclic codes. In recent years, the interest in symmetric codes has been promoted by Kaufman, Sudan, Wigderson and others (where symmetric means that the acting group can be any group). Answering their main question (contrary to the common expectation), we show that there DO exist good symmetric codes. In fact, our codes satisfy all the "golden standards" of coding theory. Our construction is based on the Ramanujan graphs constructed by Lubotzky-Samuels-Vishne as a special case of Ramanujan complexes. The crucial point is that these graphs are edge transitive and not just vertex transitive as in previous constructions of Ramanujan graphs. All notions will be explained. Joint work with Tali Kaufman.



Tuesday, February 28, 2012
at 4:25 PM in 406 Malott Hall

Refreshments will be served at 3:55 PM in the Mathematics Department lounge (532 Malott Hall).