# abstract

Computer Science/Discrete Mathematics Seminar I
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Finding cliques in random graphs and the closely related "planted" clique variant, where a clique of size k is planted in a random G(n,1/2) graph, have been the focus of substantial study in algorithm design. Despite much effort, the best known polynomial-time algorithms only solve the problem for k ~ sqrt(n). Here we show that beating sqrt(n) would require substantially new algorithmic ideas, by proving a lower bound for the problem in the Lasserre hierarchy, the most powerful class of semi-de finite programming algorithms we know of. Our (average case) lower bound uses tools from the classical theory of association schemes and some new large deviation bounds for matrix-valued polynomials which could be of independent interest. Joint work with Avi Wigderson