A Two Prover One Round Game with Strong Soundness

Date Tuesday, March 8

Time 4 pm

Location 317 Mudd

Abstract: We show that for any large integer q, it is NP-hard to distinguish whether a two prover one round game with q^6 answers has value close to 1 or at most $\frac{O(1}{q)}$. The result is obtained by combining two new techniques:

1. An Inner PCP based on the "point versus subspace" test for linear functions. The test is analyzed Fourier analytically.
2. The Outer/Inner PCP composition that relies on a certain "sub-code covering" property for Hadamard codes.

As an application, we show that unless NP has quasi-polynomial time deterministic algorithms, the Quadratic Programming Problem is inapproximable within factor $(\log n)^{1/6-o(1)}$.

The talk should be be self-contained.

Joint work with Muli Safra.