

abstract

COMPUTER SCIENCE/DISCRETE MATH I

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

The main result of this work is an explicit disperser for two independent sources on n bits, each of entropy $k = n^{\Omega(1)}$. Put differently, setting $N = 2^n$ and $K = 2^k$, we construct explicit N by N Boolean matrices for which no K by K submatrix is monochromatic. Viewed as adjacency matrices of bipartite graphs, this gives an explicit construction of K -Ramsey bipartite graphs of size N .

This greatly improves the previous the previous bound of $k = o(n)$ of Barak, Kindler, Shaltiel, Sudakov and Wigderson. It also significantly improves the 25-year record of $k = \tilde{O}(\sqrt{n})$ on the very special case of Ramsey graphs, due to Frankl and Wilson.

Another result in this paper which is interesting on its own is a construction of a new independent sources extractor that can extract from a constant number of sources of polynomially small min-entropy with exponentially small error. This improves a result of Rao \cite{Rao06}, which only achieves polynomially small error.

This is joint work with Boaz Barak, Ronen Shaltiel and Avi Wigderson.