

CSDM Seminars

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Wed, 02/27/2013 - 15:01

Sensitivity Versus Block Sensitivity, II

Series: Computer Science/Discrete Mathematics

Hao Huang

University of California, Los Angeles; Member, School of Mathematics

Date & Time: Tue, 03/19/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0319-HaoHuang>

There are two important measures of the complexity of a boolean function: the sensitivity and block sensitivity. Whether or not they are polynomial related remains a major open question. In this talk I will survey some known results on this conjecture, and its connection with various combinatorial problems.

terms:

- [CSDM Seminars](#)

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Wed, 02/27/2013 - 11:01

Derandomization of Probabilistic Logspace (The Nisan Variations)

Series: Computer Science/Discrete Mathematics

Avi Wigderson

School of Mathematics, IAS

Date & Time: Tue, 03/05/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0305-AviWigderson>

I will continue the exposition of different derandomization techniques for probabilistic logspace algorithms. The material of this talk will assume only little knowledge from the first talk.

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar I](#)

Submitted by admin on Mon, 02/25/2013 - 18:01

Quasirandom Hypergraphs

Series: Computer Science/Discrete Mathematics

Dhruv Mubayi

University of Illinois at Chicago

Date & Time: Mon, 03/04/2013 - 11:15 - 12:15

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0304-DhruvMubayi>

Since the foundational results of Thomason and Chung-Graham-Wilson on quasirandom graphs over 20 years ago, there has been a lot of effort by many researchers to extend the theory to hypergraphs. I will present some of this history, and then describe our recent results that provide such a generalization and unify much of the previous work. One key new aspect in the theory is a systematic study of hypergraph eigenvalues. If time permits I will show some applications to Sidorenko's conjecture and the certification problem for random k-SAT. This is joint work with John Lenz.

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Thu, 02/21/2013 - 12:01

Derandomizing BPL?

Series: Computer Science/Discrete Mathematics

Avi Wigderson

School of Mathematics, IAS

Date & Time: Tue, 02/26/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0226-AviWigderson>

I will survey some of the basic approaches to derandomizing Probabilistic Logspace computations, including the "classical" Nisan, Impagliazzo-Nisan-Wigderson and Reingold-Raz

generators, the Saks-Zhou algorithm and some more recent approaches. We'll see why each falls short of complete derandomization, $BPL=L$, hopefully motivating further work on this basic problem.

terms:

- [CSDM Seminars](#)

[Computer Science/Discrete Mathematics Seminar I](#)

Submitted by admin on Thu, 02/21/2013 - 12:01

Polar Codes and Randomness Extraction for Structured Sources

Series: Computer Science/Discrete Mathematics

Emmanuel Abbe

Princeton University

Date & Time: Mon, 02/25/2013 - 11:15 - 12:15

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0225-EmmanuelAbbe>

Polar codes have recently emerged as a new class of low-complexity codes achieving Shannon capacity. This talk introduces polar codes with emphasis on the probabilistic phenomenon underlying the code construction. New results and connections to randomness extraction for structured sources are discussed.

terms:

- [CSDM Seminars](#)

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Tue, 02/12/2013 - 15:01

The Chasm at Depth 3

Series: Computer Science/Discrete Mathematics

Shubhangi Saraf

Rutgers, The State University of New Jersey

Date & Time: Tue, 02/19/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0219-ShubhangiSaraf>

I will describe the very recent breakthrough result by Gupta, Kamath, Kayal and Saptharishi which shows that every polynomial P in n variables, of degree d which is polynomial in n , and which can be computed by a polynomial sized arithmetic circuit over the complex numbers, can be also computed by a *depth 3* arithmetic circuit of size sub exponential in d ; specifically size $2^{\{\sqrt{d} \text{ polylog } n\}}$ (the actual paper gives a more precise bound depending on the degree of the polynomial and size of the arithmetic circuit).

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar I](#)

Submitted by admin on Tue, 02/12/2013 - 11:01

Connectedness, Sperner's Lemma and Combinatorial Problems

Series: Computer Science/Discrete Mathematics

Penny Haxell

University of Waterloo

Date & Time: Mon, 02/18/2013 - 11:15 - 12:15

Location: S-101

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Wed, 01/30/2013 - 11:01

High Dimensional Expanders and Ramanujan Complexes

Series: Computer Science/Discrete Mathematics

Alex Lubotzky

Hebrew University

Date & Time: Tue, 02/12/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/csdm/1213/0212-AlexLubotzky>

Expander graphs, in general, and Ramanujan graphs, in particular, have been objects of intensive research in the last four decades. Many application came out, initially to computer science and combinatorics and more recently also to pure mathematics (number theory,

geometry, group theory). In recent years, there has been an interest in generalizing this theory to higher dimensional simplicial complexes. We plan to survey first the classical theory and then describe the more recent developments.

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar I](#)

Submitted by admin on Tue, 01/29/2013 - 17:01

Influences, Traces, Tribes, and Perhaps Also Thresholds

Series: Computer Science/Discrete Mathematics

Gil Kalai

Hebrew University; Yale University

Date & Time: Mon, 02/04/2013 - 11:15 - 12:15

Location: S-101

Video Link:

<http://video.ias.edu/1213/csdm/0204-GilKalai>

I will describe some recent results and problems regarding influence of sets of variables on Boolean functions: In 1989 Benny Chor conjectured that a balanced Boolean function with n variables has a subset S of size $0.4n$ with influence $(1-c^n)$ where c_0 follows from a theorem by Kahn, Kalai and Linial (KKL). I will present a recent counterexample by Kahn and me showing that up to the identity of c , the KKL bound cannot be improved.

terms:

- [CSDM Seminars](#)
-

[Computer Science/Discrete Mathematics Seminar II](#)

Submitted by admin on Tue, 01/22/2013 - 13:01

Ramsey Theory for Metric Spaces

Series: Computer Science/Discrete Mathematics

Manor Mendel

The Open University of Israel; Member, School of Mathematics

Date & Time: Tue, 02/05/2013 - 10:30 - 12:30

Location: S-101

Video Link:

<http://video.ias.edu/1213/csdm/0205-ManorMendel>

<http://math.ias.edu/files/seminars/MendelAbst.pdf>

terms:

- [CSDM Seminars](#)

-
- [« first](#)
 - [< previous](#)
 - [1](#)
 - [2](#)
 - 3
 - [4](#)
 - [5](#)
 - [6](#)
 - [7](#)
 - [8](#)
 - [9](#)
 - ...
 - [next >](#)
 - [last »](#)