FOCS 2000

The 41st Annual
IEEE Computer Society
Conference on Foundations of Computer Science

November 12 – 14, 2000
Redondo Beach, California

Sponsored by the IEEE Computer Society
Technical Committee on Mathematical
Foundations of Computing
In cooperation with ACM SIGACT

Committees

Conference General Chair: Alok Aggarwal, *IBM Research.*

Program Committee Chair: Avrim Blum, *Carnegie Mellon.*

Program Committee: Sanjeev Arora, Avrim Blum, Faith Fich, Leslie Ann Goldberg, Michael Goodrich, Monika Henzinger, Joe Kilian, Yishay Mansour, R. Ravi, Leonard Schulman, Michael Sipser, Mario Szegedy, Umesh Vazirani, David Williamson, David Zuckerman.

Local Arrangements: Marek Chrobak and Tao Jiang, *University of California, Riverside.*

General Information

Location: The conference will take place at the Crowne Plaza Hotel in Redondo Beach, California.

Registration: Instructions on how to register by fax or mail can be found in this brochure. The registration desk will be open from 6 pm to 10 pm on Saturday, and during the day on Sunday and Monday. The deadline for early registration is **October 16**.

Accommodations: A block of rooms has been reserved at the Crowne Plaza Hotel in Redondo Beach. To obtain a room at the special rate for IEEE FOCS, you need to make a reservation by **October 16**. The contact information for the hotel can be found in this brochure.

Conference Events: The technical sessions will take place on Sunday, Monday and Tuesday. Other events include the welcome reception on Saturday, the business meeting on Sunday, and the banquet followed by the Knuth prize lecture on Monday.

Proceedings: All conference participants receive a copy of the proceedings. Additional copies of the proceedings will be sold during the conference.

More information on the conference program, registration, location, travel, room sharing, and local attractions can be found at `http://www.cs.cmu.edu/~FOCS2000/`.

Corporate Support

FOCS 2000 gratefully acknowledges financial support from IBM Research, Akamai Technologies and Verity.

SATURDAY, NOVEMBER 11, 2000

Welcome Reception 7:00pm – 8:30pm

SUNDAY, NOVEMBER 12, 2000

Session 1: 8:30am – 10:10am
Chair: David Zuckerman

8:30 *Entropy waves, the zig-zag graph product, and new constant-degree expanders and extractors*
O. Reingold, S. Vadhan, and A. Wigderson

8:50 *Universality and tolerance*
N. Alon, M. Capalbo, Y. Kohayakawa, V. Rodl, A. Rucinski, and E. Szemeredi

9:10 *Extracting randomness via repeated condensing*
O. Reingold, R. Shaltiel, and A. Wigderson

9:30 *Extracting randomness from samplable distributions*
L. Trevisan and S. Vadhan

9:50 *Pseudorandom generators in propositional proof complexity*
M. Alekhnovich, E. Ben-Sasson, A.A. Razborov, and A. Wigderson

Break 10:10am – 10:30am

Session 2: 10:30am – 12:10pm
Chair: David Williamson

10:30 *Random graph models for the web graph*
R. Kumar, P. Raghavan, S. Rajagopalan, D. Sivakumar, A. Tomkins, and E. Upfal

10:50 *Optimization problems in congestion control*
R. Karp, E. Koutsoupias, C. Papadimitriou, and S. Shenker

11:10 *Fairness measures for resource allocation*
A. Kumar and J. Kleinberg

11:30 *On the approximability of trade-offs and optimal access of web sources*
C.H. Papadimitriou and M. Yannakakis

11:50 *How bad is selfish routing?*
T. Roughgarden and E. Tardos

Lunch 12:10pm – 1:30pm

Session 3: 1:30pm – 2:50pm
Chair: Sanjeev Arora

1:30 *A polylogarithmic approximation of the minimum bisection*
U. Feige and R. Krauthgamer

1:50 *Approximability and in-approximability results for no-wait shop scheduling problems*
M. Sviridenko and G. Woeginger

2:10 *Nested graph dissection and approximation algorithms*
S. Guha

2:30 *Approximating the single source unsplittable min-cost flow problem*
M. Skutella

Break 2:50pm – 3:10pm

Session 4: 3:10pm –4:30pm
Chair: Michael Sipser

3:10 *Hardness of approximate hypergraph coloring*
V. Guruswami, J. Hastad, and M. Sudan

3:30 *"Soft-decision" decoding of Chinese remainder codes*
V. Guruswami, A. Sahai, and M. Sudan

3:50 *Super-linear time-space tradeoff lower bounds for randomized computation*
P. Beame, M. Saks, X. Sun, and E. Vee

4:10 *On the hardness of graph isomorphism*
J. Toran

Break 4:30pm – 4:50pm

Session 5: 4:50pm –6:10pm
Chair: R. Ravi

4:50 *Stable distributions, pseudorandom generators, embeddings and data stream computation*
P. Indyk

5:10 *New data structures for orthogonal range searching*
S. Alstrup, G.S. Brodal, and T. Rauhe

5:30 *Nearly optimal expected-case planar point location*
S. Arya, T. Malamatos and D.M. Mount

5:50 *On levels in arrangements of curves*
T.M. Chan

FOCS Business Meeting 9:00pm – 10:00pm

MONDAY, NOVEMBER 13, 2000

Session 6: 8:30am – 10:10am
Chair: Avrim Blum

8:30 *Detecting a network failure*
J. Kleinberg

8:50 *Testing of clustering*
N. Alon, S. Dar, M. Parnas, and D. Ron

9:10 *Testing of functions that have small width branching programs*
I. Newman

9:30 *Testing that distributions are close*
T. Batu, L. Fortnow, R. Rubinfeld, W.D. Smith, and P. White

9:50 *Using upper confidence bounds for online learning*
P. Auer

Break 10:10am – 10:30am

Session 7: 10:30am – 12:10pm
Chair: Joe Kilian

10:30 *Zaps and their applications*
C. Dwork and M. Naor

10:50 *Randomizing polynomials: a new representation with applications to round-efficient secure computation*
Y. Ishai and E. Kushilevitz

11:10 *Lower bounds on the efficiency of generic cryptographic constructions*
R. Gennaro and L. Trevisan

11:30 *Concurrent oblivious transfer*
J. Garay and P. MacKenzie

11:50 *The relationship between public key encryption and oblivious transfer*
Y. Gertner, S. Kannan, T. Malkin, O. Reingold, and M. Viswanathan

Lunch 12:10pm – 1:30pm

Session 8: 1:30pm – 2:50pm
Chair: Leonard Schulman

1:30 *The online median problem*
R. Mettu and G. Plaxton

1:50 *Polynomial time approximation schemes for geometric k-clustering*
R. Ostrovsky and Y. Rabani

2:10 *Clustering data streams*
S. Guha, N. Mishra, R. Motwani, and L. O'Callaghan

2:30 *On clusterings: good, bad and spectral*
R. Kannan, S. Vempala and A. Vetta

Break 2:50pm – 3:10pm

Session 9: 3:10pm – 4:30pm
Chair: Leonard Schulman

3:10 *Fully dynamic transitive closure: breaking through the $O(n^2)$ barrier*
C. Demetrescu and G.F. Italiano

3:30 *Opportunistic data structures with applications*
P. Ferragina and G. Manzini

3:50 *Cache-oblivious B-trees*
M.A. Bender, E.D. Demaine, and M. Farach-Colton

4:10 *Using expander graphs to find vertex connectivity*
H.N. Gabow

Break 4:30pm – 4:50pm

Session 10: 4:50pm – 6:10pm
Chair: M. Szegedy

4:50 *On the boundary complexity of the union of fat triangles*
J. Pach and G. Tardos

5:10 *Straighting polygonal arcs and convexifying polygonal cycles*
R. Connelly, E.D. Demaine and G. Rote

5:30 *A combinatorial approach to planar non-colliding robot arm motion planning*
I. Streinu

5:50 *Topological persistence and simplification*
H. Edelsbrunner, D. Letscher, and A. Zomorodian

Banquet and Knuth Prize Lecture 7:00pm

TUESDAY, NOVEMBER 14, 2000

Session 11: 8:30am – 10:10am
Chair: Leslie Goldberg

8:30 *The cover time, the blanket time, and the Matthews bound*
J. Kahn, J.H. Kim, L. Lovasz, and V. H. Vu

8:50 *The product replacement algorithm is polynomial*
I. Pak

9:10 *Efficient algorithms for universal portfolios*
A. Kalai, and S. Vempala

9:30 *Sampling adsorbing staircase walks using a new Markov chain decomposition method*
R. Martin and D. Randall

9:50 *The randomness recycler: a new technique for perfect sampling*
J.A. Fill and M.L. Huber

Break 10:10am – 10:30am

Session 12: 10:30am – 12:10am
Chair: Umesh Vazirani

10:30 *An improved quantum Fourier transform algorithm and applications*
L. Hales and S. Hallgren

10:50 *Fast parallel circuits for the quantum Fourier transform*
R. Cleve and J. Watrous

11:10 *Succinct quantum proofs for properties of finite groups*
J. Watrous

11:30 *Private quantum channels*
A. Ambainis, M. Mosca, A. Tapp, and R. de Wolf

11:50 *The quantum complexity of set membership*
J. Radhakrishnan, P. Sen, and S. Venkatesh

Lunch 12:10pm – 1:30pm

Session 13: 1:30pm – 2:50pm
Chair: Leslie Goldberg

1:30 *Randomized rumor spreading*
R. Karp, C. Schindelhauer, S. Shenker, and B. Vocking

1:50 *Fast broadcasting and gossiping in radio networks*
M. Chrobak, L. Gąsieniec and W. Rytter

2:10 *Linear waste of best fit bin packing on skewed distributions*
C. Kenyon and M. Mitzenmacher

2:30 *Optimal myopic algorithms for random 3-SAT*
D. Achlioptas and G.B. Sorkin

Break 2:50pm – 3:10pm

Session 14: 3:10pm – 4:30pm
Chair: David Williamson

3:10 *Hierarchical placement and network design problems*
S. Guha, A. Meyerson, and K. Munagala

3:30 *Building Steiner trees with incomplete global knowledge*
D.R. Karger and M. Minkoff

3:50 *Cost-distance: two metric network design*
A. Meyerson, K. Munagala, and S. Plotkin

4:10 *Combinatorial feature selection problems*
M. Charikar, V. Guruswami, R. Kumar, S. Rajagopalan, and A. Sahai

Break 4:30pm – 4:50pm

Session 15: 4:50pm – 6:10pm
Chair: Michael Sipser

4:50 *The common fragment of CTL and LTL*
M. Maidl

5:10 *On the existence of booster types*
M. Herlihy and E. Ruppert

5:30 *Existential second-order logic over graphs: charting the tractability frontier*
G. Gottlob, P. Kolaitis and T. Schwentick

5:50 *Computing the determinant and Smith form of an integer matrix*
W. Eberly, M. Giesbrecht, and G. Villard

Conference Ends: 6:10pm

Registration Instructions for FOCS 2000

The registration fees for FOCS 2000 are listed on the registration form. To qualify for the early registration fee, your registration application must be postmarked by **Monday, October 16**. Refund requests will be honored until October 23.
The registration fee includes the Saturday night reception, the Monday night banquet, the Sunday night business meeting, coffee breaks, lunches Sunday through Tuesday, and a copy of the proceedings.

Please completely fill out the included registration form and send it together with the payment to

Joyce Akhtarkhavari
Attn: FOCS 2000
Department of Computer Science
University of California
Riverside, CA 92521

You can pay by check or money order (in US dollars, drawn on a US bank) payable to "**IEEE FOCS 2000**". To pay by credit card (Visa, Mastercard or Discover), fill the credit card information on the registration form, and mail it to the address above or fax it to 909-787-4643, attn. Joyce Akhtarkhavari.

If you decide to register at the conference site, it would be helpful if you notify the organizers by email to `marek@cs.ucr.edu`.

Machtey Award: The Machtey Award is presented for the most outstanding paper (or papers) written by a student or collaboration of students, as judged by the Program Committee. The award includes a grant to help defray expenses incurred in attending the Symposium. Please consider making a donation to the Machtey Award Fund so that this award tradition can be sustained. Add the amount of your donation to the total that you pay by check, money order or credit card.

Registration Form for FOCS 2000

Name____________________________

Affiliation____________________________

Address____________________________

E-mail____________________________

Phone____________________________

Dietary restrictions: Kosher___ Vegetarian___ None___

Affiliation, as it should appear on the badge:

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Please circle one category below and fill in your membership number if appropriate: #____________

Registration fees	**until 10/16**	**after 10/16**
ACM, SIGACT, IEEE or EATCS member	330	390
Author	330	390
Student	110	130
Other	420	480

Machtey Fund contribution ____________

Total registration ____________

To pay by Visa, Mastercard or Discover, provide the name that appears on the card, the billing address of this card, and the signature of the card holder.

Name____________________________

Street Address____________________________

Card Type____________________________

Card Number____________________________

Expiration Date____________________________

Signature____________________________

I agree to pay the above total amount according to card issuer agreement.

Hotel Information

The conference will be held at:

Crowne Plaza Hotel
300 N. Harbor Drive
Redondo Beach
CA 90277, USA

A block of rooms has been reserved in the hotel at the special rate of $125 per day, single or double. To obtain the room at this price, you need to make a reservation by **October 16**.

To reserve a room you can

- call the hotel at 310-318-8888 or 800-368-9760, or
- fill the form on the next page and fax it to hotel at 310-376-1930.

If you make the reservation by phone, please specify that you request the special rate for IEEE FOCS 2000.

Hotel cancellation policy: if you decide to cancel your reservation, you need to call the hotel by 6 pm of the day of arrival.

Travel Information

Redondo Beach is one of the beach cities in the Los Angeles area of Southern California. It is located 7 miles south of Los Angeles International Airport (LAX).

From LAX: Super Shuttle has service to the hotel for $9/person and it has stops in front of each terminal at LAX. For two or more people, a taxi could be more economical. If you rent a car at the airport, go south on Sepulveda Blvd (Pacific Coast Highway), pass through El Segundo, Manhattan Beach, and Hermosa Beach. In Redondo Beach, turn right on Beryl Street, then left on North Harbor Drive. The hotel will be on your left.

By car: From wherever you begin your trip, get to the 405 freeway in Los Angeles. From the 405 freeway, exit at Artesia Blvd. On Artesia go west for approximately 3 miles, then turn left into Sepulveda Blvd (Pacific Coast Highway), Continue south for about 2 miles. In Redondo Beach, turn right on Beryl Street, then left on North Harbor Drive. The hotel will be on your left.

Crowne Plaza Hotel
Redondo Beach

Reservation Request for a Participant of IEEE Computer Society FOCS 2000

Name: ______________________________

Institution: ______________________________

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City: ______________________________

State/Province: ______________________________

ZIP/Postal Code: ______________________________

Phone: ______________________________

Fax: ______________________________

How many rooms: ______________________________

Arrival (month/day/year): ______________________________

Departure (month/day/year): ______________________________

Number of adults: ______________________________

Type of room: $\boxed{\text{single}}$ $\boxed{\text{double}}$

Would you prefer: $\boxed{\text{Smoking}}$ $\boxed{\text{Non-Smoking}}$

Credit Card Name: $\boxed{\text{AmEx}}$ $\boxed{\text{Mastercard}}$ $\boxed{\text{Visa}}$

Name on Card: ______________________________

Credit Number: ______________________________

Card Expiration Date: ______________________________

I request the $125/day (single/double) special rate for IEEE Computer Society FOCS 2000.