

Elitza Maneva

- CONTACT INFORMATION** Universitat Politècnica de Catalunya *Phone:* +34-93-413-7788
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08034 Barcelona, Spain
- RESEARCH INTERESTS** Random structures and algorithms, constraint satisfaction and optimization, message-passing algorithms and heuristics, error correction and data compression.
- EDUCATION** **University of California at Berkeley, Berkeley, CA**
PhD in Computer Science, Aug 2001 - Aug 2006
Designated Emphasis in Communication, Computation and Statistics
Thesis: "Belief Propagation Algorithms for Constraint Satisfaction Problems"
Advisor: Alistair Sinclair
- California Institute of Technology, Pasadena, CA**
BS in Engineering and Applied Science, Sep 1997 - Jun 2001
Thesis: "Interactive Communication on Noisy Channels",
Advisor: Leonard J. Schulman
- EXPERIENCE** **Visiting Professor**
• *Universitat Politècnica de Catalunya, Barcelona, Spain* Sep 2008 - present
Leading lab and exercise sessions for Informàtica 1 in the School of Mathematics and Statistics, and conducting independent research.
- Postdoctoral Researcher**
• *IBM Almaden Research Center, San Jose, CA* Oct 2006 - Jul 2008
Conducted research on complexity and algorithms for constraint satisfaction problems, and on algorithms for data-base applications.
- Research Intern**
• *IBM Almaden Research Center, San Jose, CA* May 2005 - Dec 2005
Conducted research on the connectivity properties of the satisfiability solution space, and on rank aggregation.
• *Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland* Mar 2004 - Jul 2004
Designed and analyzed algorithms for computing the failure probability of the Belief Propagation decoder for LT codes.
• *IBM T.J.Watson Research Center, Yorktown Heights, NY* Jun 2000 - Sep 2000
Conducted research on maximally entangled states in quantum information.
• *IBM T.J.Watson Research Center, Yorktown Heights, NY* Jun 1999 - Sep 1999
Conducted research on entanglement purification protocols in quantum information.
• *Bates Linear Accelerator Center, MIT, Boston, MA* Jun 1998 - Sep 1998
Feedback control of the laser motion, data acquisition and data analysis for a large-scale nuclear physics experiment.
- Teaching Assistant**
• *University of California at Berkeley, Berkeley, CA* Jan 2006 - May 2006
CS 174 - Randomized Algorithms and Probabilistic Analysis, Prof. Peter Bartlett

- *University of California at Berkeley, Berkeley, CA* Sep 2004 - Dec 2004
CS 70 - Discrete Mathematics and Probability for Computer Science, Prof. Satish Rao
- *California Institute of Technology, Pasadena, CA* Sep 2000 - Jun 2001
CS 138 - Computer Algorithms, Prof. Leonard Schulman.
- *California Institute of Technology, Pasadena, CA* Sep 1999 - Jun 2000
CS 20 - Formal Languages and Automata, Prof. James Arvo.

Programmer

- *Kellogg Radiation Lab, Caltech, Pasadena, CA* Jan 1998 - May 1998
Used C to develop a feedback control system for a piezo-electric device.

PUBLICATIONS

N. Bhatnagar and E. Maneva

“A computational method for bounding the probability of reconstruction on trees”
To appear in *SIAM Journal on Discrete Mathematics*.

P. Gopalan, P. Kolaitis, E. Maneva and C. Papadimitriou

“The Connectivity of Boolean Satisfiability: Computational and Structural Dichotomies”
SIAM Journal of Computing, Volume 38, Issue 6, pp. 2330–2355, 2009.
Extended abstract in *33rd International Colloquium on Automata, Languages and Programming (ICALP)*, pp. 346–357, 2006.

F. Ardila and E. Maneva

“Pruning Processes and a New Characterization of Convex Geometries”
Discrete Mathematics, Volume 309, pp. 3083–3091, 2009.

E. Maneva and A. Sinclair

“On the Satisfiability Threshold and Clustering of Solutions of Random 3-SAT Formulas”
Theoretical Computer Science, Volume 407, pp. 359–369, 2008.

E. Maneva, E. Mossel and M. Wainwright

“A New Look at Survey Propagation and its Generalizations”
Journal of ACM, Volume 54, Issue 4, pp. 2–41, 2007.
Extended abstract in *16th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, pp. 1089–1098, 2005.

E. Maneva, T. Meltzer, J. Raymond, A. Sportiello and L. Zdeborova

“A Hike in the Phases of the 1-in-3 Satisfiability”
Lecture notes of the Les Houches Summer School 2006, Session LXXXV, Complex Systems, Volume 85, pp. 491–498, Elsevier 2007.

E. Maneva and A. Shokrollahi

“New Model for Rigorous Analysis of LT codes”
IEEE International Symposium on Information Theory (ISIT), pp. 2677–2679, 2006.

M. Wainwright and E. Maneva “Lossy Source Encoding via Message-passing and Decimation over Generalized Codewords of LDGM Codes”

IEEE International Symposium on Information Theory (ISIT), pp. 1493–1497, 2005.

A. Bogdanov, E. Maneva and S. Riesenfeld

“Power-aware Base Station Positioning for Sensor Networks”
23rd Conference of the IEEE Communications Society (INFOCOM), 2004.

A. Fabrikant, A. Luthra, E. Maneva, C. Papadimitriou and S. Shenker

“On a Network Creation Game”

22nd ACM Symposium on Principles of Distributed Computing (PODC), pp. 347–351, 2003.

E. Maneva and J. Smolin

“Improved Two-party and Multi-party Purification Protocols”

AMS Contemporary Mathematics Series, Quantum Computation and Quantum Information Science, Volume 305, pp. 203–212, 2002.

SAMPLE Collaboration: S.P. Wells et al.

“Measurement of the vector analyzing power in elastic electron-proton scattering as a probe of the double virtual Compton amplitude”

Phys. Rev. E, Volume 63, Issue 6, id 064001, 2001.

SAMPLE Collaboration: D.T. Spayde et al.

“Parity Violation in Elastic Electron-Proton Scattering and the Proton’s Strange Magnetic Form Factor”

Phys. Rev. Lett., Volume 84, pp. 1106–1109, 2000.

INVITED TALKS

Kavli Institute of Theoretical Physics China, *Phys. of Distrib. Inform. Systems*, Mar 2008

Statphys 23 Satellite Workshop on Stat. Mech. of Distrib. Inform. Systems, Jul 2007

Schloss Dagstuhl, Workshop on Complexity of Constraints, Oct 3, 2006

Schloss Dagstuhl, Workshop on Complexity of Constraints, Oct 6, 2006

Toronto University, Theory Seminar, Mar 2006

Stanford University, Information Systems Colloquium, Feb 2006

Georgia Institute of Technology, Theory Seminar, Dec 2005

MSRI, Workshop on Phase Transitions in Computation and Reconstruction, Mar 2005

Allerton Conference on Communication, Control and Computing, Sep 2004

OTHER PARTICIPATION

BIRS, Workshop on Phase Transitions, Hard Combinatorial Problems and Message Passing Algorithms, Jun 08-13, 2008

Les Houches Summer School of Theoretical Physics - Complex Systems, Jul 2006

REFEREE SERVICE

Refereed submissions for *SIAM Journal on Computing*, *RANDOM*, *SODA*, *IEEE Transactions on Information Theory*, *STACS*, *SAT*, *ITW*, *FOCS*, *Theoretical Computer Science*, *IJCAI*, *SIAM Journal on Discrete Mathematics*.

HONORS AND AWARDS

UC Berkeley Regents Fellowship, 2001/2002

Graduated with Honors from Caltech, 2001.

CRA’s Outstanding Undergraduate Award Honorable Mention, 2000

Caltech Trustee’s Scholarship, 1999/2000.

Caltech Summer Undergraduate Research Fellowship, 1998, 1999.

REFERENCES

Prof. Phokion Kolaitis, IBM Almaden Research Center, kolaitis@us.ibm.com.

Prof. Christos Papadimitriou, University of California at Berkeley, christos@cs.berkeley.edu.

Prof. Alistair Sinclair, University of California at Berkeley, sinclair@cs.berkeley.edu.

Prof. Martin Wainwright, University of California at Berkeley, wainwig@eecs.berkeley.edu.

Prof. Elchanan Mossel, University of California at Berkeley, mossel@stat.berkeley.edu.