Ronit Bustin
Curriculum Vitae

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CURRENT POSITION

September 2013 - **Postdoctoral research fellow at the Electrical Engineering Department in Princeton University, under the supervision of Prof. H. Vincent Poor**.

PERSONAL INFORMATION

Date of Birth | March 28, 1979
Place of Birth | Jerusalem, Israel
Nationality | Israel
Marital Status | Married +2

EDUCATION

2008-2013 **PhD in Information Theory**, *Technion - Israel Institute of Technology, Department of Electrical Engineering*, Technion City, Haifa, Israel.
Under the supervision of Distinguished Prof. Shlomo Shamai. Thesis: The Information-Estimation Approach for Multi-Terminal Problems in the Gaussian Regime

2004-2006 **MSc magna cum laude in Electrical Engineering - Systems**, *Tel-Aviv University, Department of Electrical Engineering*, Tel-Aviv, Israel.
Direct-path program to MSc, under the supervision of Prof. Hagit Messer-Yaron. Thesis: The use of an approximated Markov model to estimate missing parameters in biochemical system – steps towards engineering modeling of the DNA repair mechanism. Grade: 98.

2000-2004 **BSc magna cum laude in Electrical Engineering and Computer Science**, *Tel-Aviv University, Department of Electrical Engineering*, Tel-Aviv, Israel.
Completed graduate courses towards MSc.

RESEARCH INTERESTS

- Multi-terminal communication
- Estimation Theory
- Relationship between information theory and estimation theory
- Coding and code characterization
- MIMO settings
- Secrecy constraints

HONORS AND AWARDS

- Elected to speak in the "Graduation Day" Information Theory and Application Workshop (ITA), UCSD, February 2014, from Princeton University

- The women postdoctoral scholarship of Israel's Council for Higher Education (VATAT) 2013-2014
- The Rothschild post-doctoral fellowship 2013-2014
- The Andrew and Erna Finci Viterbi Graduate fellow in the faculty of Electrical Engineering for the Winter semester 2010-2011
- The Adams Fellowship from The Israel Academy of Sciences and Humanities, April 2010
- The Irwin and Joan Jacobs Scholarship from the Technion Graduate School, for excellence in graduate studies and research, January 2010
- The dean's commendation for exceptionally high student's ranking results, 2004

Journal Publications

- R. Bustin and S. Shamai (Shitz), "MMSE of "Bad" Codes", IEEE Transactions on Information Theory, Vol. 59, no. 2, pp. 733-743, Feb. 2013.
- R. Bustin, M. Payaró, D. P. Palomar and S. Shamai (Shitz), "On MMSE Crossing Properties and Implications in Parallel Vector Gaussian Channels", IEEE Transactions on Information Theory, Vol. 59, no. 2, pp. 818 - 844, Feb. 2013.
- R. Bustin, R. Liu, H. V. Poor and S. Shamai (Shitz), "An MMSE Approach to the Secrecy Capacity of MIMO Gaussian Wiretap", EURASIP Journal on Wireless Communications and Networking, Special Issue on Wireless Physical Layer Security, 2009.

Conference Publications

- R. Bustin, H. Vincent Poor and S. Shamai (Shitz), "The Effect of Maximal Rate Codes on the Interfering Message Rate", in Proc. of the IEEE International Symposium on Information Theory (ISIT 2014), Honolulu, Hawaii 2014.
- R. Bustin and S. Shamai (Shitz), "An Information-Estimation Perspective of Communications over Gaussian Interference Channels", in Proc. of the 2012 IEEE 27-th convention of Electrical Engineering in Israel, Eilat, November 2012.
- R. Bustin and S. Shamai (Shitz), "The Capacity of the Multi-MMSE Constrained Gaussian Channels", in Proc. of the IEEE International Symposium on Information Theory (ISIT 2012), Cambridge, MA, USA, 2012.
- R. Bustin and S. Shamai (Shitz), "On Gaussian Channels with MMSE Interference", in Proc. of the International Zurich Seminar, March 2012.
- R. Bustin and S. Shamai (Shitz), "Properties of the MMSE of "Bad" Codes", in Proc. of the 49th Allerton Conference on Communication, Control and Computing, Allerton, Illnoise, September, 2011.
- R. Bustin and S. Shamai (Shitz), "The I-MMSE Approach on the Weak Gaussian Z-Interference Channel and the Type I Gaussian Broadcast-Z-Interference Channel", in Proc. of the 2010 IEEE 26th convention of Electrical and Electronic Engineers in Israel, Eilat, 2010.
- R. Bustin, M. Payaró, D. P. Palomar and S. Shamai (Shitz), "On MMSE Properties and I-MMSE Implications in Parallel MIMO Gaussian Channels", in Proc. of the IEEE International Symposium on Information Theory (ISIT 2010), Austin, Texas, USA 2010.
- R. Bustin, R. Liu, H. V. Poor and S. Shamai (Shitz), "An MMSE Approach to the Secrecy Capacity of MIMO Gaussian Wiretap", in Proc. of the IEEE International Symposium on Information Theory (ISIT 2009), Seoul, Korea 2009.

- R. Bustin and H. Messer, "An Equivalent Markov Model for Gillespie's Stochastic Simulation Algorithm for Biochemical Systems", in Proc. of the European Signal Processing Conference (EUSIPCO 2006), Florence, Italy, September 2006.
- R. Bustin and H. Messer,"How is DNA Repair Optimal? Engineering Modelling of Genetic Information Flow and its Implications", poster in the Gordon Research Conference (GRC), Ventura, CA. USA, March 2006.
- R. Bustin and H. Messer, "Optimization Criteria of DNA Repair", in Proc. of the 13th IEEE Workshop on Statistical Signal Processing (SSP 2005), Bordeaux, France, July 2005.

Seminars

July 2014	**Bell Labs - Murray Hill, NJ, USA**, *The effect of maximal rate codes on the interfering message rate.*
June 2014	**Princeton, NJ, USA**, *The effect of maximal rate codes on the interfering message rate.*
April 2014	**Princeton, NJ, USA**, *The Information-Estimation Approach for Multi-Terminal Problems in the Gaussian Regime.*
March 2014	2^{dn} **Princeton Workshop on Classical, Semi-classical and Quantum Noise. Invited talk**, *MMSE of Codes in the Additive Gaussian Noise Regime.*
February 2014	**Information Theory and Applications workshop, UCSD. Graduation day talk.**, *The MMSE matrix in the parallel vector additive Gaussian Channel: How is the Gaussian input distribution better?.*
March 2013	**Technion, Israel**, *The Information-Estimation Approach for Multi-Terminal Problems in the Gaussian Regime.*
May 2012	**Invited talk, Hebrew University, Jerusalem, Israel**, *Measuring Interference in Gaussian Channels.*
Sept 2009	**Invited talk, Emerging Topics Workshop, Physical Layer Security, NEWCOM++, Padova Italy**, *Secrecy Capacity of the MIMO Gaussian Wiretap Channel: An I-MMSE Approach.*
May 2009	**Technion, Israel**, *Secrecy Capacity of the MIMO Gaussian Wiretap Channel: An I-MMSE Approach.*
June 2006	**Tel Aviv University, Israel.**.

Patents

7331029	Method and system for enhancing circuit design process
7290235	Method and system for embedding wire model objects in a circuit schematic design
7318212	Method and system for modeling wiring routing in a circuit design

Work Experience

2013	**Lecturer**, *Ort Hermelin College for Engineering.*
2008-2012	**Teaching Assistant**, *Technion - Israel Institute of Technology, Department of Electrical Engineering.*
2003-2007	**IBM research and development Labs in Tel-Aviv and Haifa**, *Circuit designer in "The Cell" project, IBM chip designed for the Sony Playstation 3 and Microsoft's XBOX.*

2004-2006	**Teaching Assistant**, *Tel-Aviv University, Department of Electrical Engineering*.
1998-2000	**Israel Defence Forces (IDF)**.

Teaching Experience

- Signal Processing, Spring 2012: Lecturer, Ort Hermelin College for Engineering
- Signals and Systems, Spring 2012: Course given by Dr. Koby Crammer and Prof. Rami Atar, Technion - Israel Institute of Technology, Department of Electrical Engineering
- Introduction to Coding Theory, Fall 2012: Course given by Prof. Neri Merhav, Technion - Israel Institute of Technology, Department of Electrical Engineering
- Stochastic Signals, Spring 2009 - Spring 2010: Course given by Prof. Rami Atar, Prof. Neri Merhav and Prof. Yossef Steinberg, Technion - Israel Institute of Technology, Department of Electrical Engineering
- Lab in Digital Communication, Fall 2009, Spring 2009, Fall 2010, Spring 2010, Fall 2011
- Stochastic Signals and Noise, Fall 2005: Course given by Prof. Hagit Messer-Yaron and Prof. Ram Zamir, Tel-Aviv University, Department of Electrical Engineering
- Introduction to Computer Networks, Spring 2005: Course given by Prof. Boaz Patt-Shamir, Tel-Aviv University, Department of Electrical Engineering
- Introduction to Stochastic Signal Processing, Fall 2004: Course given by Dr. Arie Yeredor, Tel-Aviv University, Department of Electrical Engineering. For this course I received a letter of commendation form the Dean due to exceptionally high student's teaching grades.

Languages

Hebrew	**Fluent**	*My native language.*
English	**Very Good**	*Speaking, reading, and writing.*