

# NATASHA DEVROYE

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- POSITION HELD** Associate Professor August 2015 – present  
Director of Undergraduate Studies August 2016 – present  
(Assistant Professor) (2009 – August 2015)  
Department of Electrical and Computer Engineering  
**University of Illinois at Chicago** *Voice:* (312) 996-1013  
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SEO Room 1039 *E-mail:* devroye@uic.edu  
Chicago, IL 60607-7053 USA *www:* <http://www.ece.uic.edu/Devroye>
- EDUCATION** **Harvard University** Cambridge, MA, US  
*School of Engineering and Applied Sciences* June 2007  
**Ph.D. in Engineering Sciences**  
Thesis: Information Theoretic Limits of Cognition and Cooperation in Wireless Networks  
Advisor: Professor Bahid Tarokh, *vahid.tarokh@duke.edu*
- McGill University** Montreal, QC, Canada  
*Dept. of Electrical and Computer Engineering* Winter 2002  
**B.Eng (Honours) in Electrical Engineering**  
GPA: 3.97/ 4.0, Specialization: Communications  
Thesis: Implementation of the image compression algorithm EBCOT in C++  
Advisor: Professor Fabrice Labeau, *fabrice.labeau@mcgill.ca*
- RESEARCH INTERESTS** I work in the area of network information theory, with a particular focus on determining the information theoretic performance limits of spectrum sharing and cognitive networks, interference networks, two-way networks, and relay networks. I have also recently become interested in radar signal processing, in particular motivated by cognitive radar and spectrum sharing between communications and radar. For more details on my various projects, please visit <http://www.ece.uic.edu/Devroye>
- RESEARCH EXPERIENCE** **University of Illinois at Chicago** Chicago, IL, US  
*Assistant / Associate Professor* January 2009 - May 2015  
Independent and collaborative research with colleagues, students, visiting scholars. Grant writing, graduate student supervision.
- Harvard University** Cambridge, MA, US  
*Lecturer/Post-doctoral Fellow* July 2007 - June 2008  
Independent and collaborative research with Harvard professors, students, visiting scholars. Organize weekly group seminars, invite and host speakers, aid in grant writing.
- Mitsubishi Electric Research Laboratories** Cambridge, MA, USA  
*Research intern* July 2006 - December 2006  
Headed new direction of independent research in MERL's Cooperative Communications project.  
Supervisor: Andreas F. Molisch, *molisch@merl.com*
- Intel Research** Santa Clara, CA, US  
*Summer research intern* June 2005 - August 2005  
Evaluated gains of cooperation in wireless 802.16 cellular networks.  
Supervisor: Sumeet Sandhu, *sumeet.sandhu@intel.com*

TEACHING  
EXPERIENCE

**University of Illinois at Chicago**

*Associate/Assistant Professor*

Chicago, IL, US  
January 2009 - present

- ECE 534, Elements of Information Theory, Fall 2017.  
(*Enrollment: 17. Completed evaluations: 15. Rate the instructor's overall teaching effectiveness. 5.0/5.0. Rate the overall quality of the course. 5.0/5.0*)
- ECE 341, Probability and Random Processes for Engineers, Fall 2016.  
(*Enrollment: 68. Completed evaluations: 48. Rate the instructor's overall teaching effectiveness. 4.04/5.0 Course difficulty, relative to other courses was. 4.52/5.0 (5.0 being most difficult)*)
- ECE 341, Probability and Random Processes for Engineers, Spring 2015.  
(*Enrollment: 58. Completed evaluations: 34. Rate the instructor's overall teaching effectiveness. 3.36/5.0 Course difficulty, relative to other courses was. 4.68/5.0 (5.0 being most difficult)*)
- ECE 534, Elements of Information Theory, Fall 2013.  
(*Enrollment: 19. Completed evaluations: 13. Compared with other instructors you have had at UIC, this instructor was 4.83/5.0*)
- ECE 341, Probability and Random Processes for Engineers, Spring 2013.  
(*Enrollment: 59. Completed evaluations: 27. Compared with other instructors you have had at UIC, this instructor was 4.27/5.0*)
- ECE 341, Probability and Random Processes for Engineers, Spring 2012.  
(*Enrollment: 37. Completed evaluations: 28. Compared with other instructors you have had at UIC, this instructor was 4.48/5.0*)
- ECE 534, Elements of Information Theory, Fall 2011.  
(*Enrollment: 11. Completed evaluations: 8. Compared with other instructors you have had at UIC, this instructor was 5.00/5.0*)
- ECE 531, Detection and Estimation Theory, Spring 2011.  
(*Enrollment: 6. Completed evaluations: 5. Compared with other instructors you have had at UIC, this instructor was 4.75/5.0*)
- ECE 534, Elements of Information Theory, Fall 2010.  
(*Enrollment: 8. Completed evaluations: 7. Compared with other instructors you have had at UIC, this instructor was 4.57/5.0*)
- ECE 531, Detection and Estimation Theory, Spring 2010.  
(*Enrollment: 6. Completed evaluations: 5. Compared with other instructors you have had at UIC, this instructor was 5.00/5.0*)
- ECE 534, Elements of Information Theory, Fall 2009.  
(*Enrollment: 16. Completed evaluations: 14. Compared with other instructors you have had at UIC, this instructor was 4.71/5.0*)
- ECE 531, Detection and Estimation Theory, Spring 2009.  
(*Enrollment: 5. Completed evaluations: 4. Compared with other instructors you have had at UIC, this instructor was 5.00/5.0*)

**Harvard University**

*Lecturer/Post-doctoral Fellow*

Cambridge, MA, US  
September 2007 - June 2008

- Applied Math 21a, Mathematical Methods in the Sciences, Fall 2007
- Applied Math 21b Mathematical Methods in the Sciences, Spring 2008

AWARDS AND  
SCHOLARSHIPS  
(NOT GRANTS)

- IEEE Senior Member 07/06/2016
- UIC College of Engineering 2013 Faculty Teaching Award 05/09/2013
- UIC College of Engineering 2012 Faculty Advising Award 05/04/2012
- UIC College of Engineering 2011 Faculty Research Award 02/18/2011
- Wallenberg Academy Fellow 2012  
*Prestigious 5 year fellowship (1,500,000 SEK / year for 5 years) awarded to 4 people in the field of Engineering by the Wallenberg Foundation, Sweden. Host institution Kungliga Tekniska Högskolan (KTH). Declined by Devroye.*
- UIC Researcher of the Year Award, ‘Rising Star’ category 2012  
*Sole university wide awardee for the Natural Sciences & Engineering Rising Star category. “The Rising Star award will be given to 5 UIC early career researchers who have demonstrated outstanding promise to become future leaders in their area of expertise.”*
- **Best paper award:** N. Devroye, and P. Popovski, “Receiver-side Opportunism in Cognitive Networks,” *International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)*, Osaka, June 2011.
- IEEE Communications Society Exceptional Reviewer Award 2011
- FCAR Doctoral Scholarship, Harvard University (18% acceptance) September 2004-June 2007
- FCAR Master’s Scholarship, Harvard University (32% acceptance) 2002-2004
- NSERC Scholarship, Harvard University, *declined* 2002
- James Mills Pierce Scholarship, Harvard University 2002 - June 2007
- McGill University Dean’s Honours List, Dr. Alfred S. Malowany Prize, McConnell Award, Nova Corporation Scholarship, Marian Daly Award, 1998-2002
- NSERC Undergraduate Research Award, McGill University Summer 2001

RESEARCH  
FUNDING

Over my 8 years at UIC I have brought **over \$3.5 million to UIC**, of which **my share has amounted to over \$2.1 million**. I have been PI on 5 of my 6 NSF grants (3 single-PI), 1 AFOSR grant (single-PI), and 1 Dynetics award (single-PI), and 3 internal UIC grants (all PI, 2 of 3 single-PI).

- NSF CIF: Small 1815428 01/01/2019 – 12/31/2021  
 “Fundamental limits of interactive communications.”  
 PI: Natasha Devroye. (sole PI)  
 Total amount brought to UIC: \$499,996  
 Natasha Devroye’s share: \$499,996
- FY 2017 DoD Research and Education Program for Historically Black Colleges and Universities and Minority-Serving Institutions Equipment/Instrumentation 08/16/2016 – 08/15/2017  
 “Three birds with one stone: high-frequency instrumentation for semiconductor device, radar and communication system measurements.”  
 PI: Danilo Erricolo. Co-PIs: Natasha Devroye, Hulya Seferoglu, Besma Smida, Daniela Tuninetti, Mojtaba Soltanalian, Mitra Dutta, Michael Stroschio, Luchy Shi, Ahmad Salim  
 Total amount brought to UIC: \$598,317.66  
 Natasha Devroye’s share: 8% = \$47,865.41
- NSF EAGER-7630819. 01/01/2017 – 12/31/2019  
 “Understanding cooperation through the zero error relay channel.”  
 PI: Natasha Devroye. (sole PI)  
 Total amount brought to UIC: \$249,999  
 Natasha Devroye’s share: \$249,999
- UIC COE Seed Funding 08/16/2016 – 08/15/2017  
 “On the art of communicating highly reliable short packets with low latency.”  
 PI: Natasha Devroye. Co-PIs: Hulya Seferoglu, Besma Smida, Daniela Tuninetti  
 Total amount: \$30,000

- NSF EARS-1443967. 01/01/2015 – 12/31/2018  
“Collaborative Research: Let’s share CommRad – spectrum sharing between communications and radar systems.”  
PI: Daniela Tuninetti. Co-PI: Natasha Devroye, Mark Bell, Danilo Erricolo. 30%, 30%, 25%, 15% share, resp.  
Total amount brought to UIC: \$525,00. Natasha Devroye’s share: \$210,000
- NSF CCF-1422511. 08/01/2014–07/31/2018  
“CIF: Small: Network capacity when some common information theoretic assumptions break down.”  
PI: Natasha Devroye. Co-PI: Daniela Tuninetti. 50%, 50% share.  
Total amount brought to UIC: \$500,000. Natasha Devroye’s share: \$250,000
- Dynetics 08/29/12 – 07/01/13  
“Fully Adaptive Radar.”  
PI: Natasha Devroye. (sole PI)  
Total amount brought to UIC: \$45,000, Natasha Devroye’s share: \$45,000
- NSF CCF CIF Small 1216825 01/01/2013 – 12/31/2016  
“Wireless relay networks: coding above capacity and exploiting structure.”  
PI: Natasha Devroye.  
Total amount brought to UIC: \$349,884, Natasha Devroye’s share: \$349,884
- Banff International Research Station, 5 day workshop proposal  
(all paid 5 day workshop for 42 participants; very competitive) 1/15/2012 – 1/20/2012  
“Interactive Information Theory.”  
PI: Natasha Devroye, co-PIs: Ashish Khisti, Ian Blake
- UIC WISER Fund. 03/2011 and 03/2010  
PI: Natasha Devroye.  
Total amount brought to UIC: \$1,045 (2011) and \$2,000 (2010),
- NSF CAREER 1053933. 01/01/2011– 12/31/2018  
“CAREER: Foundations for Two-way Communication Networks.”  
PI: Natasha Devroye.  
Total amount brought to UIC: \$449,924, Natasha Devroye’s share: \$449,924.
- AFOSR FA9550-10-1-0239. 06/15/2010–06/14/2013  
“Fundamental Bounds on Information Fusion with Focus on Waveform-based Intent Detection and Avoidance.”  
PI: Natasha Devroye.  
Total amount brought to UIC: \$284,122, Natasha Devroye’s share: \$284,122.
- NSF CCF-1017436. 09/01/2010–08/31/2014  
“CIF: Small: Fundamental Limits of Layered Wireless Networks.”  
PI: Natasha Devroye. Co-PI: Daniela Tuninetti. 50%, 50% share.  
Total amount brought to UIC: \$499,030, Natasha Devroye’s share: \$249,515,

STUDENTS  
GRADUATED,  
POST-DOCS  
SUPERVISED

- Meysam Asadi, Post-doc, 01/2017 - 07/2018, supported by NSF EAGER 1645381. Currently at SK hynix Alerica Inc.
- Ahmad Salim, Post-doc, 06/15/2016 - 07/2018, supported by NSF EARS-1443967 and jointly supervised by Danilo Erricolo and Daniela Tuninetti. Currently at MaxLinear.
- Zohreh Ovaisi, Master’s student, 8/15/2016 - 7/20/2018. Defended 7/20/2018. “On Erasure

- Broadcast Channels with Hard Deadlines,” jointly supervised by Daniela Tuninetti, Besma Smida, and Hulya Seferoglu. Currently in UIC’s CS Ph.D. program.
- Sara Shahi, Ph.D. student 9/1/2018 - 7/1/2018. Defended 06/15/2018. “Massive Asynchronous Communications,” jointly supervised by Daniela Tuninetti. Currently at Qualcomm.
  - Alex Dytso, Ph.D. student, 5/1/2011 - 5/3/2016. Defended 05/2016. “Discrete Inputs in Gaussian Interference Networks: Performance Analysis and Approximate Optimality”. Supported by NSF 1017436 and 1422511, jointly supervised by Daniela Tuninetti. Currently postdoc at Princeton University.
  - Yanying Chen, Ph.D. student, 11/1/2011 - 10/2015. Defended 06/2015. “Exploiting Structure in Cooperative Networks.” Supported by NSF 1216825. Currently employed at FICO.
  - Diana Maamari, Ph.D. student, 11/1/2011 - 5/15/2015. Defended 03/2015. “Fundamental limits of Cognitive Networks and Cooperation in Millimeter Wave Networks”. Partially supported by NSF 1017436, 1216825, 1422511. Jointly supervised by Daniela Tuninetti. Currently at Huawei.
  - Zhiyu Cheng, Ph.D. student, 1/1/2010 - 5/31/2014. Defended 03/2014. “Fundamental Limits of Wireless Two-way Full-duplex Communication Network.” Partially supported by NSF CAREER 1053933. Currently employed at Baidu, formerly at Freescale, AT&T Bell labs.
  - Yiwei Song, Ph.D. student 9/1/2009 - 9/3/2013. Defended 09/2013. “Structured Codes and Cooperative Strategies in Wireless Relay Networks.” Supported by NSF CAREER 1053933 and NSF 1216825. Currently employed at A9, formerly SanDisk.
  - Dr. Pawan Setlur, Post-doc, 7/1/2011 - 01/15/2013. Supported by AFOSR FA9550-10-1-0239. Currently research contractor at Air Force Research Lab, Dayton, OH.
  - Andrea DiPaolo, Master’s thesis, supervised by Guido Masera and Natasha Devroye. Defended 05/2011. “VLSI Implementation of a Polar Code Decoder.”
  - Stefano Rini, Ph.D student. Main advisor: Daniela Tuninetti, co-supervisor: Natasha Devroye. Defended 11/2010. “On the Role of Cognition in Wireless Networks: an Information Theoretic Perspective.” Post-doc at Stanford and Technische Universitat Munchen. Currently Assistant Professor at the National Chiao Tung University.
  - Carlo Condo, Master’s thesis, supervised by Guido Masera and Natasha Devroye. Defended 06/2010. “A Parallel LDPC Decoder with Network on Chip as Underlying Architecture.”

STUDENTS AND  
POST-DOCS  
CURRENTLY  
ADVISING

- Yeqi Wei, 08/2018 - present, supported by NSF 1815428.
- Gregory Schmit, 07/2018 - present. Jointly supervised by Wenjing Rao.
- Siyao Li, 07/2018 - present. Jointly supervised by Daniela Tuninetti, Besma Smida, and Hulya Seferoglu.
- Narueporn Nartasilpa, Ph.D. student 8/15/2015 - present, partially supported by NSF EARS-1443967 and jointly supervised by Daniela Tuninetti.
- Kenneth Palacio-Baus, Ph.D. student 8/15/2016 - present. Supported by NSF CAREER 1053933.
- Konstantin Muranov, Ph.D. student, 1/1/2011 - present, jointly supervised by Besma Smida. Passed qualifying exam. Working full-time at Intel (formerly Motorola).

UNDERGRADUATE  
STUDENT RESEARCH

- Senior Thesis Design Advisor, Spring 2018. “HDMI Unchained: A wireless HDMI” by Brian Dina
- Senior Thesis Design Advisor, Spring 2018. “Shared Space Management System” by Preston Hansen, Max Luebbe and Nicholas Saffle
- Senior Thesis Design Advisor, Spring 2017. “The North Star,” by Shao-Yu Fu, Yechao Dai, and Philip Geluz
- Naveed Naimipour, Spring 2015. “Finding the corner points for mixed inputs in a Gaussian interference channel”
- Raul Custodio, Spring 2015. “Computing the chromatic number of a graph”
- Zaid Abuseini, Spring 2015. “Computing the independence number of a graph”
- Senior Thesis Design Advisor, Spring 2015. “Battery Powered Bluetooth People Counter,” by Kyle Schwartz, Erica Hampton, Mario Carpio and Andrey Vlasov.
- Senior Thesis Design advisor, Fall 2011. “Guitar Effects Pedal,” by David Majchrowski, Zenaido

Vallejo, and Charles Hughes.

- Senior Thesis Design advisor, Spring 2011. “Wireless Proximity Detection,” by Matt Rice, Russell Teller, Cody Moy, and MattYap.
- Senior Thesis Design advisor, Fall 2010. “Remote Computer Startup Device,” by Andrew Suh, Tony Gallotta, and Daniel Ceh.

JOURNAL  
PUBLICATIONS  
CURRENTLY UNDER  
SUBMISSION

S. Shahi, D. Tuninetti and N. Devroye, "The Strongly Asynchronous Massive Access Channel," submitted to the *IEEE Transactions on Information Theory*, July 22, 2018.

S. Shahi, D. Tuninetti and N. Devroye, "On the Capacity of the Slotted Strongly Asynchronous Channel with a Bursty User," submitted to the *IEEE Transactions on Information Theory*, October 12, 2017.

N. Nartasilpa, A. Salim, D. Tuninetti and N. Devroye, "Communication System Performance and Design in the Presence of Radar Interference," to appear in the *IEEE Transactions on Communications*, 2018.

JOURNAL  
PUBLICATIONS

37. O. Dytso, R. Bustin, D. Tuninetti, N. Devroye, S. Shamai, H.V. Poor, "On the Minimum Mean  $p$ -th Error in Gaussian Noise Channels and its Applications," *IEEE Transactions on Information Theory*, Vol. 64, No. 3, pp. 2012-2037, March 2018.

36. S. Shahi, D. Tuninetti, and N. Devroye, "On the Capacity of the AWGN Channel with Additive Radar Interference," *IEEE Transactions on Communications*, Vol. 66, No. 2, pp. 629-642, February 2018.

35. O. Dytso, R. Bustin, D. Tuninetti, N. Devroye, S. Shamai, H.V. Poor, "On Communication through a Gaussian Channel with an MMSE Disturbance Constraint," *IEEE Transactions on Information Theory*, Vol. 64, No. 1, pp. 513-530, January 2018.

34. Y. Chen and N. Devroye, "Zero-error Relaying for Primitive Relay Channels," *IEEE Transactions on Information Theory*, Vol. 63, No. 12, pp. 7708-7715, December 2017.

33. Y. Chen, Y. Song and N. Devroye, "The capacity region of the  $L$ -user Gaussian inverse-compute-and-forward problem," *IEEE Transactions on Information Theory*, Vol. 62, No. 12, December 2016.

32. A. Dytso, D. Tuninetti and N. Devroye, "Interference as Noise: Friend or Foe?" *IEEE Transactions on Information Theory*, Vol. 62, No. 6, pp. 3561 - 3596, June, 2016.

31. D. Maamari, N. Devroye and D. Tuninetti, "Coverage in mmWave Cellular Networks with Base station Cooperation," *IEEE Transactions on Wireless Communications*, Vol. 15, No. 4, pp. 2981 - 2994, April 2016.

30. Z. Cheng, N. Devroye and T. Liu, "The Degrees of Freedom of Full-Duplex Bi-directional Interference Networks with and without a MIMO Relay," *IEEE Transactions on Wireless Communications*, Vol. 15, No. 4, pp. 2912 - 2924, April 2016.

29. D. Maamari, D. Tuninetti and N. Devroye, "Multi-user Cognitive Interference Channels: A Survey and New Capacity Results," *IEEE Transactions on Cognitive Communications and Networking*, Vol.1, No.1, pp. 29-44, October 2015.

28. A. O'Connor, P. Setlur, and N. Devroye, "Single-sensor RF Emitter Localization based on Multipath Exploitation," *IEEE Transactions on Aerospace and Electronic Systems*, Vol. 51, No. 3, pp. 1635 - 1651, July 2015.

27. A. Dytso, D. Tuninetti and N. Devroye, "On the Two-User Interference Channel With Lack of Knowledge of the Interference Codebook at One Receiver," *IEEE Transactions on Information Theory*, Vol. 61, No. 3, pp. 1256-1276, March 2015.

26. D. Maamari, N. Devroye and D. Tuninetti, "The Sum-Capacity of the Ergodic Fading Gaussian Cognitive Interference Channel," *IEEE Transactions on Wireless Communications*, Vol. 14, No. 2,

pp. 809 - 820, February 2015.

25. A. Dytso, S. Rini, N. Devroye and D. Tuninetti, "On the Capacity Region of the Two-user Interference Channel with a Cognitive Relay," *IEEE Transactions on Wireless Communications*, Vol. 13, No. 12, pp. 6824 - 6838, December 2014.
24. Y. Song, N. Devroye, H-R. Shao and C. Ngo, "Lattice Coding for the Two-way Line Network," *IEEE Journal on Selected Areas in Communications – special issue on Full Duplex Wireless Communications and Networks*, Vo.32, No. 9, pp. 1707–1720, June 2014.
23. S. Rini, D. Tuninetti, N. Devroye, and A. Goldsmith, "On the Capacity of the Interference Channel with a Cognitive Relay," *IEEE Transactions on Information Theory*, Vol. 60, No. 4, pp. 2148–2179, April 2014.
22. Z. Cheng and N. Devroye, "Two-way Networks: when Adaptation is Useless," *IEEE Transactions on Information Theory*, Vol. 60, No. 3, pp. 1793–1813, March 2014.
21. P. Setlur, T. Negishi, N. Devroye, D. Erricolo, "Multipath Exploitation in Non-LOS Urban Imaging," *IEEE Journal of Selected Topics in Signal Processing, special issue on Non-cooperative Localization Networks*, Vol. 8, No. 1, pp. 137 – 152, February 2014.
20. D. Maamari, D. Tuninetti, and N. Devroye, "Approximate Sum-Capacity of K-user Cognitive Interference Channels with Cumulative Message Sharing," *IEEE Journal of Selected Areas in Communications – Cognitive Radio Series*, Vol. 32, No. 3, pp. 654-666, March 2014.
19. Y. Song and N. Devroye, "Lattice codes for the Gaussian relay channel: Decode-and-Forward and Compress-and-Forward," *IEEE Transactions on Information Theory*, Vol. 59, No.8, pp. 4927–4948, August 2013.
18. P. Setlur and N. Devroye, "Multipath Exploited Bayesian and Cramer-Rao Bounds for Single Sensor Target Localization," *EURASIP Journal on Advances in Signal Processing: Special Issue on Emerging Radar Techniques*, Vol. 53, No. 1, pp. 1-23, 2013.
17. P. Setlur and N. Devroye, "An Information Theoretic Take on Time Reversal for Non-Stationary Channels," *IEEE Signal Processing Letters*, Vol. 20, no. 4, pp. 327–330, April 2013.
16. S. Rini, D. Tuninetti and N. Devroye, "Inner and Outer Bounds for the Gaussian Cognitive Interference Channel and New Capacity Results," *IEEE Transactions on Information Theory*, vol. 58, no. 2, pp. 820 - 848, February 2012.
15. S.J. Kim, N. Devroye, P. Mitran and V. Tarokh, "Achievable rate regions and performance comparison of half duplex bi-directional relaying protocols," *IEEE Transactions on Information Theory*, vol. 57, no. 10, pp. 6405 - 6418, October 2011.
14. W.-Y. Shin, S.-W. Jeon, N. Devroye, M. Vu, S.-Y. Chung, Y. Lee and V. Tarokh, "Improved Capacity Scaling in Wireless Networks With Infrastructure," *IEEE Transactions on Information Theory*, vol. 57, no. 8, pp. 5088 - 5102, August 2011.
13. S.-W. Jeon, N. Devroye, M. Vu, S.-Y. Chung and V. Tarokh, "Cognitive Networks Achieve Throughput Scaling of a Homogeneous Network," *IEEE Transactions on Information Theory*, vol. 57, no. 8, pp. 5103 - 5115, August 2011.
12. S. Rini, D. Tuninetti and N. Devroye, "New Inner and Outer Bounds for the Discrete Memoryless Cognitive Interference Channel and some Capacity Results," *IEEE Transactions on Information*



*Theory*, vol. 57, no. 7, pp. 4087–4109, July 2011.

11. I. Krikidis, N. Devroye, and J. Thompson, “Stability Analysis for Cognitive Radio with Multi-Access Primary Transmission,” *IEEE Transactions on Wireless Communications*, vol.9, no.1, pp.72–77, January 2010.

10. T. Koike-Akino, N. Devroye, and V. Tarokh, “Frequency-Domain Bit-Flipping Equalizer for Wideband MIMO Channels,” *IEEE Transactions on Wireless Communications*, vol.8, no.10, pp.4969–4973, October 2009.

9. M. Vu, N. Devroye, and V. Tarokh, “On the Primary Exclusive Region of Cognitive Networks,” *IEEE Transactions on Wireless Communications*, vol.8, no.7, pp.3380–3385, July 2009.

8. N. Devroye, N. B. Mehta, and A. F. Molisch, “Asymmetric Cooperation Among Wireless Relays with Linear Precoding,” *IEEE Transactions on Wireless Communications*, vol.7, no.12, pp.5420–5430, December 2008.

7. N. Devroye, P. Mitran, V. Tarokh, “Achievable Rates in Cognitive Radio Channels,” *IEEE Transactions on Information Theory*, vol. 52, no. 5, pp.1813-1827, May 2006.

6. P. Mitran, N. Devroye, V. Tarokh, “On Compound Channels with Side-Information at the Transmitter,” *IEEE Transactions on Information Theory*, vol. 52, no. 4, pp. 1745-1755, April 2006.

5. M. Vu, N. Devroye and V. Tarokh, “An Overview of Scaling Laws in Ad Hoc and Cognitive Radio Networks,” *Springer Journal, Special Issue on Cognitive Radio Technologies*, online March 2008, ISSN 0929-6212 (print) 1572-834X (online) (*invited*).

4. N. Devroye, M. Vu and V. Tarokh, “Scaling Laws and Achievable Rates for Cognitive Radio Models,” *EURASIP Journal on Wireless Communications and Networking, special issue on Cognitive Radio and Dynamic Spectrum Sharing Systems*, February 2008 (*invited*).

3. N. Devroye, P. Mitran, O.-S. Shin, H. Ochiai, V. Tarokh, “Cooperation and Cognition in Wireless Networks,” *SK Telecom Review, special issue on 4G Spectrum and System Engineering issues*, February 2007 (*invited*).

2. N. Devroye, M. Vu and V. Tarokh, “Cognitive Radio Networks,” *IEEE Signal Processing Magazine*, vol. 25, no. 6, pp. 12-23, November 2008 (*invited*).

1. N. Devroye, P. Mitran, V. Tarokh, “Limits on Communications in a Cognitive Radio Channel,” *IEEE Communications Magazine*, vol. 44, no. 6, pp. 44-49, June 2006.

CONFERENCE  
PROCEEDINGS

92. M. Asadi and N. Devroye, “On the zero-error capacity of channels with rate limited noiseless feedback,” *56th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2018.

91. M. Asadi, K. Palacio-Baus, and N. Devroye, “A Relaying Graph and Special Strong Product for Zero-error Problems in Primitive Relay Channels,” *International Symposium on Information Theory (ISIT)*, Vail, CO, June 2018.

90. K. Palacio-Baus, and N. Devroye, “On Two-way AWGN Channel Error Exponents at Zero Rate,” *International Symposium on Information Theory (ISIT)*, Vail, CO, June 2018.

89. S. Shahi, D. Tuninetti, and N. Devroye, "On Identifying a Massive Number of Distributions," *International Symposium on Information Theory (ISIT)*, Vail, CO, June 2018.
88. Z. Ovaisi, N. Devroye, H. Seferoglu, B. Smida, and D. Tuninetti, "On Erasure Broadcast Channels with Hard Deadlines," *International Conference on Communications (ICC) Workshop on 5G & Beyond - Enabling Technologies and Applications focus on the Tactile Internet (5G TACNET)*, Kansas City, May 2018.
87. D. Tuninetti, B. Smida, N. Devroye and H. Seferoglu "Scheduling on the Gaussian Broadcast Channel with Hard Deadlines," *International Conference on Communications (ICC)*, Kansas City, May 2018.
86. N. Nartasilpa, S. Shahi, A. Salim, D. Tuninetti, N. Devroye, D. Erricolo, D.P. Zilz, and M.R. Bell, "Lets share CommRad: Co-existing Communications and Radar Systems," *IEEE Radar Conference (RADARCON)*, Oklahoma City, OK, April 2018.
85. M. Asadi and N. Devroye, "On the zero-error capacity of channels with noisy feedback," *55th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2017.
84. S. Shahi, D. Tuninetti, and N. Devroye, "On the Capacity of the Slotted Strongly Asynchronous Channel with a Bursty User," *Information Theory Workshop (ITW)*, Kaohsiung, Taiwan, November 2017.
83. N. Nartasilpa, D. Tuninetti and N. Devroye, "Signal Constellation Design in the Presence of Radar Interference and Gaussian Noise," to appear in *MILCOM*, Baltimore, October 2017.
82. A. Salim and D. Tuninetti and N. Devroye and D. Erricolo, "Modeling the Interference of Pulsed Radar Signals at OFDM-Based Communications Systems," *the IEEE Radar Conference (RadarCon)*, Baltimore, May 2017.
81. K. Muranov, B. Smida and N. Devroye, "On Channel Equalization for Full-duplex Relay Networks," *IEEE International Conference on Communications (ICC)*, Paris, France, May 2017.
80. A. Dytso, R. Bustin, H.V. Poor, D. Tuninetti, N. Devroye and S. Shamai, "Some Results on the Generalized Gaussian Distribution," *the Information Theory and Applications Workshop (ITA)*, San Diego, CA, February 2017.
79. N. Devroye, "When is the zero-error capacity positive in the relay, multiple-access, broadcast and interference channels?," *54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2016.
78. S. Shahi, D. Tuninetti and N. Devroye, "On the Capacity of the AWGN Channel with Additive Radar Interference," *54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2016.
77. N. Nartasilpa, D. Tuninetti, N. Devroye and D. Erricolo, "On the Error Rate of a Communication System Suffering from Additive Radar Interference," *IEEE Global Communications Conference (GlobeCom)*, Washington D.C., December 2016.
76. O. Dytso, R. Bustin, D. Tuninetti, N. Devroye, H.V. Poor and S. Shamai, "On the Applications of the Minimum Mean  $p$ -th Error (MMPE) to Information Theoretic Quantities," *Information Theory Workshop (ITW)*, Cambridge, September 2016.

75. S. Shahi, D. Tuninetti and N. Devroye, "On the Capacity of Strong Asynchronous Multiple Access Channels with a Large Number of Users," *International Symposium on Information Theory (ISIT)*, Barcelona, July 2016.
74. O. Dytso, R. Bustin, D. Tuninetti, N. Devroye, H.V. Poor, S. Shamai, "On the Minimum Mean  $p$ -th Error in Gaussian Noise Channels and its Applications," *International Symposium on Information Theory (ISIT)*, Barcelona, July 2016.
73. D. Tuninetti, N. Devroye and D. Erricolo, "Characterization of the Effect of Radar Interference on an Uncoded Data Communication System," *2016 IEEE Antennas & Propagation Conference*, Puerto Rico, July 2016.
72. N. Nartasilpa, D. Tuninetti, N. Devroye and D. Erricolo, "Let's Share CommRad: Effect of Radar Interference on an Uncoded Data Communication System," *IEEE Radar Conference (RadarCon)*, Philadelphia, May 2016.
71. A. Dytso, R. Bustin, D. Tuninetti, N. Devroye, S. Shamai, and H.V. Poor, "On communications through a Gaussian channel with an MMSE disturbance constraint," *Information Theory and Applications Workshop (ITA)* San Diego, January 2016. (5 pages, invited)
70. O. Dytso, D. Tuninetti, and N. Devroye, "Nearly Optimal Non-Gaussian Codes for the Gaussian Interference Channel," *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, November 2015. (5 pages, invited)
69. O. Dytso, D. Tuninetti, and N. Devroye, "i.i.d. Mixed Inputs and Treating Interference as Noise are gDoF Optimal for the Symmetric Gaussian Two-user Interference Channel," *International Symposium on Information Theory (ISIT)*, Hong Kong, June 2015. (5 pages)
68. D. Maamari, D. Tuninetti, and N. Devroye, "On the Sum-Capacity of the Cognitive Interference Channel with Cognitive-Only Message Sharing," *International Symposium on Information Theory (ISIT)*, Hong Kong, June 2015. (5 pages)
67. Y. Chen and N. Devroye, "On the Optimality of Colour-and-Forward Relaying for a Class of Zero-error Primitive Relay Channels," *International Symposium on Information Theory (ISIT)*, Hong Kong, June 2015. (5 pages)
66. O. Dytso, D. Tuninetti, and N. Devroye, "The Gaussian Interference Channel with Lack of Codebook Knowledge at one Receiver: Symmetric Capacity to within a Gap with a PAM Input," *Information Theory Workshop (ITW)*, Jerusalem, April 2015. (5 pages)
65. Y. Chen, S. Shahi and N. Devroye, "Colour-and-Forward: relaying what the destination needs in the zero-error primitive relay channel," *52nd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2014. (8 pages)
64. S. Hajizadeh and N. Devroye, "Dependence Balance Outer Bounds for the Discrete Memoryless Two-way Multiple Access Broadcast Channel," *52nd Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2014. (8 pages)
63. M. Bell, N. Devroye, D. Erricolo, T. Koduri, S. Rao and D. Tuninetti, "Results on Spectrum Sharing between a Radar and a Communications System," *Int. Conf. on Electromagnetics in Advanced Applications*, Palm Beach, August 2014.
62. Z. Cheng and N. Devroye, "The Degrees of Freedom of the  $K$ -pair-user Full-Duplex Two-way Interference Channel with a MIMO Relay," *International Symposium on Information Theory (ISIT)*,

Honolulu, July 2014. (5 pages)

61. D. Maamari, N. Devroye and D. Tuninetti, "The Capacity of the Ergodic MISO Channel with Per-antenna Power Constraint and an Application to the Fading Cognitive Interference Channel," *International Symposium on Information Theory (ISIT)*, Honolulu, July 2014. (5 pages)

60. A. Dytso, N. Devroye and D. Tuninetti, "On Gaussian Interference Channels with Mixed Gaussian and Discrete Inputs," *International Symposium on Information Theory (ISIT)*, Honolulu, July 2014. (5 pages)

59. A. Dytso, D. Tuninetti and N. Devroye, "On Discrete Alphabets for the Two-user Gaussian Interference Channel with One Receiver Lacking Knowledge of the Interfering Codebook," *Information Theory and Applications Workshop (ITA)*, February 2014. (5 pages, invited)

58. P. Setlur, N. Devroye and M. Rangaswamy, "Radar Waveform Design with the Two Step Mutual Information," *IEEE Radar Conference (RadarCon)*, Cincinnati, May 2014. (5 pages)

57. Z. Cheng and N. Devroye, "On constant gaps for the  $K$ -pair user two-way Gaussian interference channel with interaction," *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Austin, December 2013. (4 pages, invited)

56. Z. Cheng and N. Devroye, "Degrees of Freedom of the Two-way Interference Channel with a Non causal Multi-antenna Relay," *IEEE Global Comm. Conf. (GLOBECOM)*, Atlanta, December 2013. (6 pages)

55. D. Maamari, N. Devroye and D. Tuninetti, "The Sum-Capacity of different  $K$ -user Cognitive Interference Channels in Strong Interference," *IEEE Information Theory Workshop*, Seville, September, 2013. (5 pages)

54. Y. Song, N. Devroye, H-R. Shao and C. Ngo, "Lattice Coding for the Two-way Two-relay Channel," *International Symposium on Information Theory (ISIT)*, Istanbul, pp. 1312-1-1316, July 2013. (5 pages)

53. Y. Chen, Y. Song and N. Devroye, "The capacity region of three user Gaussian inverse-compute-and-forward channels," *International Symposium on Information Theory (ISIT)*, Istanbul, pp. 1476-1480, July 2013. (5 pages)

52. D. Maamari, D. Tuninetti and N. Devroye, "On the  $K$ -user Cognitive Interference Channel with Cumulative Message Sharing Sum-Capacity," *International Symposium on Information Theory (ISIT)*, Istanbul, pp. 2034-2038, July 2013. (5 pages)

51. A. Dytso, N. Devroye and D. Tuninetti, "On the Capacity of Interference Channels with Partial Codebook Knowledge," *International Symposium on Information Theory (ISIT)*, Istanbul, July, pp. 2039-2043, 2013. (5 pages)

50. P. Setlur and N. Devroye, "On the Mutual Information of Time Reversal for Non-Stationary Channels," *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Vancouver, May 2013. (4 pages)

49. P. Setlur and N. Devroye, "Bayesian and Cramer-Rao Bounds for Single Sensor Target Localization via Multipath Exploitation," *International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Vancouver, May 2013. (4 pages)

48. B. Smida and N. Devroye, "Optimization of Two-way Communication with ARQ Feedback,"

*International Conference on Communications (ICC)*, Budapest, June 2013. (6 pages)

47. P. Setlur, N. Devroye, and M. Rangaswamy, "Waveform Design and Scheduling in Space-Time Adaptive Radar," *IEEE Radar Conference (RadarCon)*, Ottawa, May 2013. (6 pages)

46. Z. Cheng and N. Devroye, "On Constant Gaps for the Two-way Gaussian Interference Channel," *50th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2012. (6 pages)

45. A. Dytso, N. Devroye, and D. Tuninetti, "The sum-capacity of the symmetric linear deterministic Complete K-user Z-interference channel," *50th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, October 2012. (6 pages)

44. M. Nokleby, B. Nazer, B. Aazhang, and N. Devroye, "Relays that Cooperate to Compute," *International Symposium on Wireless Communication Systems*, Paris, France, August 2012. (5 pages)

43. A. Dytso, N. Devroye and D. Tuninetti, "Sum-capacity of the symmetric linear deterministic Complete K-user Z-interference channel," *International Symposium on Information Theory (ISIT)*, Cambridge, MA, July 2012. (poster)

42. P. Setlur and N. Devroye, "Waveform Scheduling Via Directed Information in Cognitive Radar," *IEEE Statistical Signal Processing Workshop*, Ann Arbor, MI, August 2012. (5 pages)

41. Z. Cheng and N. Devroye, "On the Capacity of Multi-user Two-way Linear Deterministic Channels," *International Symposium on Information Theory (ISIT)*, Cambridge, MA, July 2012. (5 pages)

40. D. Maamari, N. Devroye and D. Tuninetti, "The Sum-Capacity of the Linear Deterministic Three-User Cognitive Interference Channel," *International Symposium on Information Theory (ISIT)*, Cambridge, MA, July 2012. (5 pages)

39. H. Hayvaci, P. Setlur, N. Devroye, and D. Erricolo, "Maximum Likelihood Time Delay Estimation and Cramér-Rao Bounds for Multipath Exploitation," *IEEE Radar Conference (RadarCon)*, Atlanta, May 2012. (6 pages)

38. A. Dytso, N. Devroye, and D. Tuninetti, "On The Capacity of the Symmetric Interference Channel with a Cognitive Relay at High SNR," *International Conference on Communications (ICC)*, Ottawa, June 2012. (5 pages)

37. P. Setlur and N. Devroye, "Adaptive waveform scheduling in radar: an information theoretic approach," *SPIE Defense, Security, and Sensing*, Baltimore, April 2012. (12 pages)

36. Y. Song and N. Devroye, "A Lattice Compress-and-Forward Scheme," *Information Theory Workshop*, Paraty, Brazil October 2011. (5 pages)

35. Z. Cheng and N. Devroye, "Multi-user Two-way Deterministic Modulo 2 Adder Channels When Adaptation Is Useless," *Forty-Ninth Annual Allerton Conference on Communication, Control, and Computing*, Monticello, September 2011. (5 pages)

34. N. Devroye, "An Information Theoretic Take on Close-loop Information Gathering," *Defense Applications of Signal Processing (DASP)*, Coolum, Australia, July 2011. (12 pages) (*by invitation only, invited for spotlight talk*)

33. Y. Song, N. Devroye, and B. Nazer, "Inverse Compute-and-Forward: Extracting Messages from Simultaneously Transmitted Equations," *International Symposium on Information Theory (ISIT)*, St. Petersburg, August 2011. (5 pages)
32. S. Rini, D. Tuninetti, and N. Devroye, "Capacity to within 3 Bits for a Class of Gaussian Interference Channels with a Cognitive Relay," *International Symposium on Information Theory (ISIT)*, St. Petersburg, August 2011. (5 pages)
31. S. Rini, D. Tuninetti, and N. Devroye, "A New Capacity Result for the Z-Gaussian Cognitive Interference Channel," *International Symposium on Information Theory (ISIT)*, St. Petersburg, August 2011. (5 pages)
30. S. Rini, D. Tuninetti, N. Devroye, and A. Goldsmith, "The Capacity of the Interference Channel with a Cognitive Relay in Strong Interference," *International Symposium on Information Theory (ISIT)*, St. Petersburg, August 2011. (5 pages)
29. S.J. Kim, B. Smida and N. Devroye, "Lattice Strategies for a Multi-Pair Bi-Directional Relay Network," *International Symposium on Information Theory (ISIT)*, St. Petersburg, August 2011. (5 pages)
28. N. Devroye, and P. Popovski, "Receiver-side Opportunism in Cognitive Networks," *International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)*, Osaka, June 2011. (5 pages) **Best paper award.**
27. D. Tuninetti, N. Devroye, and Y. Keshtkarjahromi, "On Cognitive Channels with an Oblivion Constraint," *International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)*, Osaka, June 2011. (5 pages)
26. S. Rini, D. Tuninetti, and N. Devroye, "The Capacity of the Semi-Deterministic Cognitive Interference Channel and its Application to Constant Gap Results for the Gaussian Channel," *IEEE International Conference on Communications ICC2011*, Kyoto, June 2011. (5 pages)
25. Z. Cheng and N. Devroye, "An Outer Bound Region for the Parallel Two-way Channel with Interference," *45th annual Conference on Information Sciences and Systems (CISS)*, Baltimore, March 2011. (5 pages)
24. Y. Song and N. Devroye, "A Lattice Compress-and-Forward Strategy for Canceling Known Interference in Gaussian Multi-hop Channels," *45th annual Conference on Information Sciences and Systems (CISS)*, Baltimore, March 2011. (5 pages)
23. Y. Song and N. Devroye, "Structured Interference-Mitigation in Two-hop Networks," *Information Theory and Applications Workshop*, UCSD, San Diego February 2011. (5 pages) (*invited*)
22. Y. Song, N. Devroye, "List Decoding for Nested Lattices and Applications to Relay Channels," *Forty-Eighth Annual Allerton Conference on Communication, Control, and Computing*, Monticello, September 2010. (5 pages) (*invited*)
21. S. Rini, D. Tuninetti and N. Devroye, "New Results on the Capacity of the Gaussian Cognitive Interference Channel," *Forty-Eighth Annual Allerton Conference on Communication, Control, and Computing*, Monticello, September 2010. (5 pages)
20. A. Attar, N. Devroye, H. Li, and V.C.M. Leung, "Achieving Fairness in Distributed Cognitive Radio Networks Using a Timer Mechanism," *Workshop on Cognitive Communications (WUN COGCOM)*, York, September 2010. (5 pages)

19. S. Rini, D. Tuninetti and N. Devroye, "Outer Bounds for the Interference Channel with a Cognitive Relay," *ITW 2010*, Dublin, September 2010. (5 pages)
18. S. Rini, D. Tuninetti and N. Devroye, "On the capacity of the Gaussian Cognitive S channel," poster at the *International Symposium on Information Theory (ISIT)*, Austin, June 2010. (5 pages)
17. S.J. Kim, B. Smida and N. Devroye, "Capacity bounds on multi-pair two-way communication with a base-station aided by a relay," *International Symposium on Information Theory (ISIT)*, Austin, June 2010. (5 pages)
16. A. Attar, N. Devroye, H. Li and V.C.M. Leung, "A Unified Scheduling Framework Based on Virtual Timers for Selfish-Policy Shared Spectrum," *ICC 2010*, Cape Town, May 2010. (5 pages)
15. S. Rini, D. Tuninetti, and N. Devroye, "State of the cognitive interference channel: a new unified inner bound," in the *2010 International Zurich Seminar on Communications*, Zurich, March 2010. (5 pages)
14. S. Rini, D. Tuninetti, and N. Devroye, "The Capacity Region of Gaussian Cognitive Radio Channels to within 1.87 bits," in *Information Theory Workshop*, Cairo, January 2010. (5 pages)
13. S. Rini, D. Tuninetti and N. Devroye, "The Capacity Region of the Gaussian Cognitive Radio Channels at High SNR," *Information Theory Workshop*, Taormina, October 2009. (5 pages)
12. S.-W. Jeon, N. Devroye, M. Vu, S.-Y. Chung and V. Tarokh, "Cognitive Networks Achieve Throughput Scaling of a Homogeneous Network," *WiOPT (co-located with ISIT)*, Seoul, June 2009. (5 pages)
11. S.J. Kim, N. Devroye and V. Tarokh, "A class of Bi-directional multi-relay protocols," *International Symposium on Information Theory (ISIT)*, Seoul, June 2009. (5 pages)
10. W.-Y. Shin, S.-W. Jeon, N. Devroye, M. Vu, S.-Y. Chung, Y. Lee and V. Tarokh, "Improved Capacity Scaling in Wireless Networks With Infrastructure," *International Symposium on Information Theory (ISIT)*, Toronto, July 2008. (5 pages)
9. S.J. Kim, N. Devroye, P. Mitran and V. Tarokh, "Achievable rate regions for bi-directional relaying," *IEEE Sarnoff Symposium*, Princeton, April 2008. (5 pages)
8. M. Vu, N. Devroye, M. Sharif, and V. Tarokh, "The primary exclusive region in cognitive networks," *IEEE Consumer Comm. and Networking Conf. (CCNC)*, Las Vegas, January 2008 (*invited*). (5 pages)
7. N. Devroye, N. B. Mehta, and A. F. Molisch, "Asymmetric Cooperation Among Relays with Linear Precoding," *IEEE Globecom*, Washington DC, November 2007. (5 pages)
6. M. Vu, N. Devroye and V. Tarokh, "Scaling laws of Cognitive Networks," *International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWNCOM)*, Orlando, August 2007 (*invited*). (5 pages)
5. N. Devroye and M. Sharif, "The Multiplexing Gain of MIMO X-channels with Partial Transmit Side Information," *International Symposium on Information Theory (ISIT)*, Nice, June 2007. (5 pages)
4. N. Devroye, P. Mitran, V. Tarokh, "Cognitive Decomposition of Wireless Networks," *First International Conference on Cognitive Radio Oriented Wireless Networks and Communications (CROWN-*

COM), Mykonos Island, June 2006 (*invited*). (5 pages)

3. N. Devroye, P. Mitran, V. Tarokh, "Achievable Rates in Cognitive Networks," *International Symposium on Information Theory (ISIT)*, Adelaide, September 2005. (5 pages)

2. N. Devroye, P. Mitran, V. Tarokh, "Achievable Rates in Cognitive Radio Channels," *39th Annual Conf. on Information Sciences and Systems (CISS)*, Baltimore, March 2005. (5 pages)

1. R. Yim, N. Devroye, V. Tarokh, H.T. Kung, "Achieving fairness in two-dimensional generalized processor sharing," *22nd Biennial Symposium on Commun.*, Kingston, Canada, April 2004. (5 pages)

#### BOOK CHAPTERS

5. N. Devroye, "Information Theoretical Limits on Cognitive Radio Networks," *Cognitive Radio Communications and Networks; Principles and Practice*, A.M. Wyglinski, M. Nekovee and Y.T. Hou Ed, Elsevier 2009. (39 pages)

4. E. Hossain, L. Le, N. Devroye and M. Vu, "Cognitive Radio: From Theory to Practical Network Engineering," *Advances in Wireless Communications*, V. Tarokh, I.F. Blake, A. Gulliver Ed., 2009. (41 pages)

3. N. Devroye and V. Tarokh, "Fundamental Limits of Cognitive Radio Networks," *Cognitive Wireless Networks: Concepts, Methodologies and Vision*, F.H.P. Fitzek and M. Katz Ed., Springer, 2007. (29 pages)

2. N. Devroye, P. Mitran, M.Sharif, S. Ghassemzadeh, and V. Tarokh, "Information Theoretic Analysis of Cognitive Radio Systems," *Cognitive Wireless Communications*, V. Bhargava and E. Hossain Ed., Springer, 2007. (33 pages)

1. O.-S. Shin, N. Devroye, P. Mitran, H. Ochiai, S. S. Ghassemzadeh, H. T. Kung, and V. Tarokh, "Cooperation, Competition and Cognition in Wireless Networks: From Theory to Implementation," *Cooperation in Wireless Networks: Principles and Applications*, F. H. P. Fitzek and M. Katz Ed., Springer, 2006. (36 pages)

#### NON-INTERVIEW INVITED TALKS

"On the zero-error capacity of channels with noisy feedback," *invited to the Information Theory and Applications Workshop* at the Catamaran Resort, San Diego, February 12, 2018.

"One-Shot Zero Error Network Problems (with and without Solutions)" *invited to the SINE/CSL Seminar Series* at the University of Illinois at Urbana Champaign, March 13, 2017.

"One-Shot Zero Error Network Problems (with and without Solutions)" *invited to the Informal Systems Seminar at the Centre for Intelligent Machines* at McGill University, November 28, 2016.

"One-Shot Zero Error Network Problems (with and without Solutions)" *invited to the ECE Seminar Series* at the Illinois Institute of Technology, November 22, 2016.

"Discrete Inputs in Interference Channels, and the Zero-error Primitive Relay Channel" *invited to the Information Processing Group seminar* at the École Polytechnique Fédérale de Lausanne (EPFL), May 17, 2016.

"A quick introduction to information theory" *invited lecture in the Fundamentals of Informatics course (non-science major)* at Kyoto University, October 14, 2015.

"A touch of network information theory" *invited to the Kyoto University Informatics Seminar*, October 1, 2015.



“When should interference be treated as noise?” *invited at the Department of Electrical and Computer Engineering at the National University of Singapore, August 27, 2015.*

“An introduction to two-way networks,” *invited to the Systems, Information and Learning Optimization (SILO) seminar series at the University of Wisconsin at Madison, December 10, 2014.*

“What information theory can (and cannot) tell us about spectrum sharing,” *invited talk to Huawei University Days, Rolling Meadows, IL, August 11-12, 2014.*

“A few examples (and open problems) of when adaptation is useless in two-way networks” *invited talk to the Workshop on Sequential and Adaptive Information Theory, Montreal, Quebec, November 7-9, 2013.*

“A (very brief) tour of three network information theory problems: two-way networks, cognitive networks, and lattice coding for relay networks” *invited to Intel, host Greg Agami, Libertyville, IL, June 12, 2013.*

“To adapt or not in two-way interference channels?” *invited to Workshop on Interference in Networks, Boston University, June 30, 2012.*

“Multi-user two-way channels: can adaptation be useless?” *invited to Northwestern University, May 30, 2012.*

“Exploiting scene knowledge in radar systems,” *AFRL Wright-Patterson Air Force Base, hosts Murali Rangaswamy and Braham Himed, February 28, 2012.*

“A quick introduction to information theory,” *invited to UIC Undergraduate Math Club Seminar, February 22, 2012.*

“Examples of when interaction is useless in multi-user two-way channels,” *invited to ITA@UCSD, January 2012.*

“Lattice codes for Gaussian relay channels,” *invited to the BIRS workshop Algebraic Structure in Network Information Theory, August 14-19, 2011.*

“Information theory’s role in going beyond cognitive radio,” *invited to the NSF Workshop on “Beyond Cognitive Radio” UIUC, June 13-14, 2011.*

“Structured interference-mitigation in two-hop networks,” *invited to ITA@UCSD, February 2011.*

“Lattices and list decoding for relay networks,” *invited to ICWS & Communications seminar, UIUC, November 2010.*

“Multi-user information theory and an example: the two-way relay channel,” *invited to UIC Statistics, and Computer Science Seminar Series, October 2010.*

“Lattice list decoding and applications to relay channels,” *invited to Allerton, September 2010.*

“Information theoretic limits of two-way relay networks,” *invited to Motorola, June 24 2010.*

“Information theoretic limits of cognitive networks,” *invited to University of Western Ontario, May 2010.*

“Fundamental Limits of Cognitive Networks,” *invited to Purdue University, Lecture on Science of*

*Information*, February 2010.

“Inner and outer bounds on multi-pair bi-directional relay networks,” *invited to ITA@UCSD*, January 2010.

“Software-defined radio at UIC” given in collaboration with Ph.D. student Udayasree Yeddanapudi at *UIC’s Departmental Seminar Series*, December 2009.

“Fundamental Limits of Cognitive Networks: Tutorial and Tour” *invited to Motorola’s Technical Enrichment Matrix program*, Schaumburg, IL, July 10, 2009.

#### TUTORIALS

Invited lecturer (3 hour lecture) at the *2016 North American School of Information Theory*.

“Structured codes in wireless relay networks,” *SYTACOM Research Workshop (plenary speaker)*, McGill, June 14-15, 2012.

“Communicating dialogues: an information theoretic view of the past and present advances and challenges in two-way communications,” *given at the 33rd IEEE Sarnoff Symposium in Princeton*, NJ, April 12, 2010.

“Information Theoretic Limits of Cognition and Cooperation in Wireless Networks ” *given at Wireless @ Virginia Tech’s 5th Annual Symposium on Wireless Personal Communications*, June 3-5, 2009.

#### NON-TECHNICAL TALKS

“An academic path: me, my job and my research” *given to two final year Physics classes at the Young Women’s Leadership Charter School of Chicago* about my experiences getting into academia and wireless communications, November 2009.

“A Personal Timeline,” *given to UIC’s Society of Women Engineering* in their “Recipes for Success” series, October 2009.

#### PATENTS

Work on cooperative communications at **Mitsubishi Electric Research Labs** led to the patent application “Asymmetric Cooperation in Downlink Cellular Networks with Relay stations”. Patent number: 7778598; Filing date: Jan 22, 2007; Issue date: Aug 17, 2010; Application number: 11/625,565

#### SERVICE

##### **Associate Editorships:**

- **Associate Editor** for the IEEE Transactions on Information Theory (Communications area), August 1, 2017 – present.
- **Associate Editor** for the IEEE Transactions on Cognitive Communications and Networking, September 5, 2015 – present.
- **Associate Editor** for the IEEE Journal on Selected Areas in Communications – Cognitive Radio Series, April 15, 2012 - April 15, 2015.
- **Associate Editor** for the IEEE Transactions on Wireless Communications (Resource Management and Multiple Access (RMMA) group), August 15 2011 - January, 2015.

##### **Professional outreach and memberships:**

- **Senior member** of IEEE.
- **Affiliate** of the NSF Center for Science Information (CSoI), joined on October 20, 2015.
- **Founding member and interim chair** of the IEEE Information Theory Chicago Chapter, October 2015.

- **Secretary** of the Information Theory Society, 2011, 2012.

**Professional conference organization:**

- **TPC co-chair** of the 2020 IEEE Communications Theory Workshop
- **Recent results co-chair** for the 2018 International Symposium on Information Theory.
- **Information theory liaison** for 2015 IEEE Radar Conference.
- **Session chair** at ISIT 2016, “Degrees of Freedom in Wireless Networks”.
- **Session organizer** for the 2015 IEEE Radar Conference on “Radar and Information Theory,” May 12, 2015.
- **Chair** of the 2012 Banff Institute Research Station award for the proposed workshop “Interactive Information Theory,” (PI, award 12w5119) from Jan 15 - Jan 20, 2012.
- **Session organizer** for the 2012 IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting. Session titled “Cognitive radio – improvements through the integration of electromagnetic theory with communications theory,” July 8-14, 2012.
- **Publicity co-chair** of the IEEE Communications Theory Workshop in 2011, 2012, and 2014.
- **Co-chair** of the Cognitive Radio Networks Symposium of Globecom 2011.
- **Co-organizer** of the 2009 North American Summer School of Information Theory, held at Northwestern University, August 10-13, 2009.

**Technical Program Committee member for:**

- International Symposium on Information Theory (ISIT), 2013–2018
- International Conference on Communications (ICC), 2012, 2010
- Globecom Communications Theory Symposium, 2009, 2010, 2011
- APCC 2012, ISITA 2010, IWCMC 2010, PIMRC 2008, Crowncom 2008, ICCCN 2008, and VTC 2012, 2008.

**Reviewer** for the journals *IEEE Transactions on Information Theory*, *IEEE Transactions on Wireless Communications*, *IEEE Transactions on Communications*, *IEEE Communication Letters*, *IEEE Journal of Selected Areas of Communications*, *IEEE Transactions on Signal Processing*, *EURASIP Journal on Wireless Communications and Networking*, *SK Telecom Review*, *IEEE Transactions on Mobile Computing*, *IEEE Journal on Selected Topics in Signal Processing*, *IEEE Transactions on Vehicular Technology*

**Reviewer** for the *National Science Foundation*, the *Qatar National Research Fund*

**Women in Science + Engineering Activity:**

- Sole speaker at the Women in Science and Engineering event on February 22, 2018, where spoke to a female only STEM dormitory at UIC campus about the challenges facing women in engineering.
- Sole speaker and “role model” at Women in Engineering Summer Program event held at UIC on July 10, 2017. Spoke about the ECE department, Natashas own research and experience as a woman in engineering to a cohort of 30 female high school students.
- Participated in the February 25, 2017 UIC WIEP “Introduce a Girl of Engineering Day”, where 30-35 Chicago area female high school students visited and built things in UIC’s College of Engineering new Makerspace.
- **Panelist** for WISEST Workshop: Grant Writing Tips in STEM, February 10, 2017.
- **Panel leader** on the Information Theory Society Outreach Subcommittee’s Mentoring event, panel on “Navigating the Tenure Track”, held at ISIT 2016.

- **Women in Information Theory (WITHITS) co-chair**, January 2016 - present. Organized 2-3 events per year on WITHITS topics at the major international conferences. Started a WITHITS directory, <https://sites.google.com/site/womenininformationtheory/>
- Panelist for **Women in Science and Engineering** panel on how to “Setup and Supervise a Successful Lab.” April 10, 2015.
- Speaker and interviewer at **UIC College of Engineering Women in Engineering Scholarship Brunch**, aiming to recruit top female students into ECE, Saturday February 14 and 21, 2015 and Saturday February 18, 2017, and Saturday February 10, 2018.
- Panelist on “**Surviving the Tenure Track**” held at the 2014 International Symposium on Information Theory.
- Speaker and panelist at the **2012 WISE End of Year Celebration**, April 4, 2012.
- Panelist for the **2012 WISE panel on Applying for an NSF CAREER Award**, May 14, 2012.

#### UIC SERVICE

- Director of Undergraduate Studies, ECE department, 2016- present
- CoE Educational Policy Committee (EPC), 2016-2017, 2017-2018, 2018-2019
- UIC ECE Advisory Committee 2013-2014, 2014-2015, 2016-2017, 2017-2018, 2018-2019
- UIC Senate, Fall 2013 - Fall 2016
- UIC Student Research Forum Faculty Judge 2013
- Honors College Faculty Fellow, January 2012 - present
- Honors College Scholarship Committee, August 2014 - present
- Member of SEO 1000 Renovations committee, 2012
- Member of Hiring committee, 2010-2011, 2014
- Member of Curriculum Revision committee, Communications branch, 2011
- Member of Graduate committee, 2009-2011, 2013-2014
- Member of Undergraduate Committee, 2011-2012. Chair of it 2016-2017, 2017-2018. 2018-2019
- Member of Student Scholarships Committee 2012-2013, 2013-2014, 2014-2015, 2016-2017, 2017-2018, 2018-2019
- Member of Computer + Web Committee, 2009 - 2012
- Member of Grievance Committee, 2012-2014
- ECE Seminar Series Chair Fall 2014, Co-chair Spring 2015
- ECE Recruitment committee 2014-2015, 2016-2017, 2017-2018, 2018-2019
- ECE ABET Committee 2018-2019
- ECE Promotion and Tenure Committee 2016- present