Mehrdad Tahmasbi

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ACADEMIC

Postdoc, Centrum Wiskunde & Informatica/University of Amsterdam, Amsterdam, Netherlands 2020 -

Doctor of Philosophy (PhD), Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA, 2015 - 2020
GPA: 4.00 / 4.00
Thesis: *Covert Communication: from classical channels to quantum channels*

Master of Science (MS), Mathematics, *Georgia Institute of Technology*, Atlanta, GA, 2015 - 2019
GPA: 4.00 / 4.00

Master of Science (MS), Electrical and Computer Engineering, *Georgia Institute of Technology*, Atlanta, GA, 2015 - 2018
GPA: 4.00 / 4.00

Bachelor of Science (BS), Electrical Engineering *Sharif University of Technology*, Tehran, Iran, 2010 - 2014
GPA: 17.92 / 20

Bachelor of Science (BS), Pure Mathematics *Sharif University of Technology*, Tehran, Iran, 2010 - 2014
GPA: 19.40 / 20

FIELDS OF INTEREST

Quantum cryptography, Quantum information theory, Quantum computing

HONORS AND AWARDS

Georgia Tech Sigma Xi Best Ph.D. Thesis Award, 2021.

Graduate Research Assistant Excellence Award, School of ECE, Georgia Tech, 2019.

Silver Medal in International Olympiad in Informatics, Waterloo, Canada, September 2010.

Gold Medal in Iranian National Olympiad in Informatics, Tehran, Iran, March 2009.

Bronze Medal in Iranian National Physics Olympiad, Tehran, Iran, September 2009.

3^{rd} Team in Regional Contests of ACM ICPC West Asia Region, December 2013.

PUBLICATIONS

Journal Paper

1. **M. Tahmasbi**, A. Shahrasbi and A. Gohari, "Critical Graphs in Index Coding," in *IEEE Journal on Selected Areas in Communications*, vol. 33, no. 2, pp. 225-235, Feb. 2015.

2. **M. Tahmasbi** and M. R. Bloch, "First and Second Order Asymptotics in Covert Communication," *IEEE Transactions on Information Theory*, vol. 65, no. 4, pp. 2190–2212, Apr. 2019.
3. **M. Tahmasbi** and M. R. Bloch, "Framework for Covert and Secret Key Expansion over Classical-Quantum Channels," *Physical Review A*, vol. 99, no. 5, p. 052329, May 2019
4. **M. Tahmasbi**, M. R. Bloch, "Covert Secret Key Generation with an Active Warden," *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 1026 - 1039, Aug. 2019.
5. **M. Tahmasbi**, M. R. Bloch and A. Yener, "Learning Adversary's Actions for Secret Communication," *IEEE Transactions on Information Theory*, vol. 66, no. 3, pp. 1607-1624, March 2020.
6. **M. Tahmasbi**, A. Savard and M. R. Bloch, "Covert Capacity of Non-Coherent Rayleigh-Fading Channels," *IEEE Transactions on Information Theory*, vol. 66, no. 4, pp. 1979-2005, Apr. 2020.
7. **M. Tahmasbi** and M. R. Bloch, "Covert and secret key expansion over quantum channels under collective attacks," IEEE Transactions on Information Theory, vol. 66, no. 11, pp. 7113–7131, Nov. 2020.
8. I. A. Kadampot, **M. Tahmasbi**, and M. R. Bloch, "Multilevel-Coded Pulse-Position Modulation for Covert Communications over Binary-Input Discrete Memoryless Channels," IEEE Transactions on Information Theory, vol. 66, no. 10, pp. 6001–6023, Oct. 2020.
9. **M. Tahmasbi** and M. R. Bloch, "Steganography Protocols for Quantum Channels," Journal of Mathematical Physics, vol. 61, no. 8, p. 082201, Aug. 2020.
10. **M. Tahmasbi** and M. R. Bloch, "Towards Undetectable Quantum Key Distribution over Bosonic Channels," IEEE Journal on Selected Areas in Information Theory, vol. 1, no. 2, pp. 585–598, Aug. 2020.
11. **M. Tahmasbi** and M. R. Bloch, "On Covert Quantum Sensing and the Benefits of Entanglement," IEEE Journal on Selected Areas in Information Theory, vol. 2, no. 1, pp. 352–365, Mar. 2021.

Conference Papers

1. **M. Tahmasbi**, A. Shahrasbi and A. Gohari, "Critical Graphs in Index Coding," in Proc. of *IEEE International Symposium on Information Theory*, Honolulu, HI, 2014, pp. 281-285.
2. **M. Tahmasbi** and F. Fekri, "On the Capacity Achieving Probability Measures for Molecular Receivers," in Proc. of *IEEE Information Theory Workshop*, Jeju, 2015, pp. 109-113.
3. **M. Tahmasbi** and M. R. Bloch, "Second-Order Asymptotics of Covert Communications over Noisy Channels," in Proc. of *IEEE International Symposium on Information Theory, Barcelona*, Spain, Jul. 2016, pp. 2224–2228.
4. **M. Tahmasbi** and M. R. Bloch, "Second-Order Asymptotics for Degraded Wiretap Channels: How Hood Are Existing Codes?," in *54th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Sep. 2016, pp. 830–837.
5. **M. Tahmasbi**, M. R. Bloch and A. Yener, "Learning Adversary's Actions for Secret Communication," in Proc. of *IEEE International Symposium on Information Theory*, Aachen, Germany, Jun. 2017, pp. 2713–2717.

6. K. S. Kumar Arumugam, I. A. Kadampot, **M. Tahmasbi**, S. Shah, M. Bloch and S. Pokutta, "Modulation Recognition Using Side Information and Hybrid Learning," in Proc. *IEEE Int. Symp. Dynamic Spectrum Access Networks (DySPAN)*, Piscataway, NJ, Mar. 2017, pp. 1–2.
7. **M. Tahmasbi**, M. R. Bloch and V. Y. F. Tan, "Error Exponent for Covert Communications over Discrete Memoryless Channels," in Proc. of *IEEE Information Theory Workshop*, Kaohsiung, Taiwan, Nov. 2017, pp. 304–308.
8. **M. Tahmasbi** and M. R. Bloch, "Covert Secret Key Generation," in Proc. of *IEEE Conference on Communications and Network Security, Workshop on Physical-Layer Methods for Wireless Security*, Las Vegas, NV, Oct. 2017, pp. 540–544.
9. I. A. Kadampot, **M. Tahmasbi** and M. R. Bloch, "Multilevel-Coded Pulse-Position Modulation for Covert Communications," in Proc. of *IEEE International Symposium on Information Theory*, Vail, CO, Jun. 2018, pp. 1864–1868.
10. I. A. Kadampot, **M. Tahmasbi**, and M. R. Bloch, "Codes for Covert Communication over Additive White Gaussian Noise Channels," in Proc. of *IEEE International Symposium on Information Theory*, Paris, France, Jul. 2019, pp. 977–981.
11. **M. Tahmasbi** and M. Bloch, "Steganography Protocols for Quantum Channels," in Proc. of *IEEE International Symposium on Information Theory*, Paris, France, Jul. 2019, pp. 2179–2183.
12. **M. Tahmasbi**, M. Bloch, and A. Yener, "In-Band Sensing of the Adversary's Channel for Secure Communication in Wireless Channels." in Proc. of *IEEE International Symposium on Information Theory*, Paris, France, Jul. 2019, pp. 2184–2188.
13. **M. Tahmasbi** and M. Bloch, "Covert Communication with Unknown Code at Warden," to be appeared in Proc. of *Annual Allerton Conference on Communication, Control, and Computing (Allerton)*.
14. **M. Tahmasbi** and M. R. Bloch, "Active Covert Sensing," in Proc. of IEEE International Symposium on Information Theory, Los Angeles, CA, Jun. 2020, pp. 840–845.
15. C Majenz, C Schaffner, **M Tahmasbi**[1] "Limitations on Uncloneable Encryption and Simultaneous One-Way-to-Hiding", submitted to *Annual Conference on Quantum Information Processing (QIP)* available at arxiv:2103.14510.
16. C Majenz, M Ozols, C Schaffner, **M Tahmasbi**[2] "Local Simultaneous State Discrimination", submitted to *Annual Conference on Quantum Information Processing (QIP)* availble at arxiv:2111.01209.

TEACHING EXPERIENCES

TA for Information Theory (**University of Amsterdam**)
TA for Statistical Machine Learning (**Georgia Tech**)
TA for Probability and Statistics (**Georgia Tech**)
TA for Wireless Communication (**Georgia Tech**)
TA for Adaptive Filtering (**Georgia Tech**)
TA for Computer Structure and Microprocessor
TA for Communication Systems
TA for Digital Signal Processing
TA for Mathematical Analysis 1

[1]The authors order is alphabetical
[2]The authors order is alphabetical

TA for Advanced Programming (JAVA)
Part-time Teacher at Allemeh Helli High School Teaching Graph Theory

REVIEWER

Journals

IEEE Transactions on Information Theory
IEEE Transactions on Forensics and Security
IEEE Transactions on Communications
IEEE Transactions on Wireless Communication
IEEE Transactions on Molecular, Biological, and Multi-Scale Communications
Advances in Mathematics of Communications
Journal of Selected Topics in Signal Processing
International Journal of Communication Systems

Conferences

IEEE International Symposium on Information Theory 2016, 2017, 2018, 2019
IEEE Information Theory Workshop 2017
IEEE Wireless Communications and Networking Conference 2018
The International Symposium on Information Theory and Its Applications 2018
Eurocrypt 2021

SELECTED GRADUATE COURSES

Algebraic Geometry, Functional Analysis, High Dimensional Statistics, Statistical Machine Learning, Quantum Computation and Quantum Communication, Stochastic Calculus, Harmonic Analysis, Real Analysis, Introduction to Hilbert Spaces, Classical Probability, Statistical Estimation, Coding Theory and Applications, Probabilistic Methods in Combinatorics

COMPUTER SKILLS

Programming Languages: C++, MATLAB, R, Python, Latex
Operating Systems: Mac, Linux (Ubuntu), Windows

REFERENCES

Christian Schaffner
Associate Professor
Institute for Logic, Language and Computation (ILLC)
University of Amsterdam
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Matthieu Bloch
Associate Professor
School of Electrical and Computer Engineering
Georgia Institute of Technology
Email: matthieu.bloch@ece.gatech.edu

Christian Majenz
Assistant Professor
Department of Applied Mathematics and Computer Science
Technical University of Denmark
Email: chmaj@dtu.dk