Mehrdad Tahmasbi

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ACADEMIC POSITIONS	Postdoctoral scholar (Future Faculty Fellow) , University of Illinois Urbana-Champaign, Champaign, IL, United States 2023 -
	Postdoctoral scholar , Tufts University, Medford, MA, United States 2022 - 2023
	Postdoctoral scholar , Centrum Wiskunde & Informatica/University of Amsterdam, Amsterdam, Netherlands 2020 - 2022
EDUCATION	Doctor of Philosophy (PhD) , Electrical and Computer Engineering, <i>Georgia Institute of Technology</i> , Atlanta, GA, 2015 - 2020 GPA: 4.00 / 4.00
	Thesis: Covert Communication: from classical channels to quantum channels
	Master of Science (MS), Mathematics, <i>Georgia Institute of Technology</i> , 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	Quantum information theory, Quantum algorithm, Quantum complexity theory
HONORS AND AWARDS	The Illinois Quantum Information Science and Technology Center (IQUIST) post-doctoral scholarship
	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.

PUBLICATIONS

Postdoc Publications

- S. Mehraban and M. Tahmasbi¹ "Quadratic Lower bounds on the Approximate Stabilizer Rank: A Probabilistic Approach," presented at *QIP 2024*, to be presented at *STOC 2024*, available at arxiv:2305.10277
- M. Bullock, A. Sheikholeslami, M. Tahmasbi, R. Macdonald, S. Guha, B. Bash Covert "Communication over Classical-Quantum Channels," submitted to *IEEE Transactions on Information Theory*, available at arxiv: 1601.06826
- L. Farràs, J. Has, M. Ozol, C Schaffner, M Tahmasbi² "Parallel repetition of local simultaneous state discrimination", submitted to *Quantum*, available at arxiv:2211.06456.
- C Majenz, C Schaffner, M Tahmasbi³ "Limitations on Uncloneable Encryption and Simultaneous One-Way-to-Hiding", available at arxiv:2103.14510.
- C Majenz, M Ozols, C Schaffner, M Tahmasbi⁴ "Local Simultaneous State Discrimination", presented at *QIP* 2022, to be published in *Physical Review A*, available at arxiv:2111.01209.

Journal Papers

- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- 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.
- 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.

¹The authors order is alphabetical

 $^{^{2}}$ The authors order is alphabetical

³The authors order is alphabetical

⁴The authors order is alphabetical

- 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.
- 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

- 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.
- 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.
- 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.
- M. Tahmasbi and M. R. Bloch, "Second-Order Asymptotics for Degraded Wiretap Channels: How Good Are Existing Codes?," in 54th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, Sep. 2016, pp. 830–837.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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).
	 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.
TEACHING EXPERIENCES	Teaching Quantum Information and Quantum Communication (University of Am- sterdam) 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 Adaptive Filtering (Georgia Tech) TA for Computer Structure and Microprocessor TA for Computer Structure and Microprocessor TA for Digital Signal Processing TA for Mathematical Analysis 1 TA for Advanced Programming (JAVA) Part-time Teacher at Allemeh Helli High School Teaching Graph Theory
MENTORING	Jonas Has (undergraduate student at University of Amsterdam)
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 QIP 2022, 2023
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

COMPUTERProgramming Languages: C++, MATLAB, R, Python, LatexSKILLSOperating Systems: Mac, Linux (Ubuntu), Windows

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