

## Education

PRINCETON UNIVERSITY, PRINCETON, NJ, USA

Degree: Ph.D., Electrical Engineering (09/2010)  
Thesis: “Channel coding: non-asymptotic fundamental limits”  
Advisers: H. V. Poor and S. Verdú

MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY, RUSSIA

Degree: M.S. with Honors, Applied Mathematics and Physics (06/2005)  
Degree: B.S. with Honors, Applied Mathematics and Physics (06/2003)

## Journal Publications and Preprints

- B. Geshkovski, C. Letrouit, Y. Polyanskiy, and P. Rigollet, “The emergence of clusters in self-attention dynamics,” *arXiv:2305.05465*, May. 2023
- T. Jayashankar, G. Lee, A. Lancho, A. Weiss, Y. Polyanskiy, and G. W. Wornell “Score-based source separation with applications to digital communication signals,” *arXiv:2306.14411*, Jun. 2023
- G. Bresler, C. Guo, and Y. Polyanskiy, “Algorithmic decorrelation and planted clique in dependent random graphs: the case of extra triangles,” *arXiv:2305.09995*, May 2023
- Y. Gu and Y. Polyanskiy, “Weak recovery threshold for the hypergraph stochastic block model,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- P. R. Gerber, Y. Han, and Y. Polyanskiy, “Minimax optimal testing by classification,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- S. Jana, Y. Polyanskiy, A. Teh, and Y. Wu, “Empirical Bayes via ERM and Rademacher complexities: the Poisson model,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- Z. Jia, Y. Polyanskiy, and Y. Wu, “Entropic characterization of optimal rates for learning Gaussian mixtures,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- A. Block and Y. Polyanskiy, “The sample complexity of approximate rejection sampling with applications to smoothed online learning,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- Y. Gu and Y. Polyanskiy, “Uniqueness of BP fixed point for the Potts model and applications to community detection,” *Proc. Conf. on Learning Theory (COLT-2023)*, Jul. 2023.
- P. R. Gerber and Y. Polyanskiy, “Likelihood-free hypothesis testing,” *arXiv:2211.01126*, Nov. 2022
- Q. Yu and Y. Polyanskiy, “Ising model on locally tree-like graphs: uniqueness of solutions to cavity equations,” *arXiv:2211.15242*, Nov. 2022
- S. Jana, Y. Polyanskiy, and Y. Wu, “Optimal empirical Bayes estimation for the Poisson model via minimum-distance methods,” *arXiv:2209.01328*, Sep. 2022
- A. Adler, J. Tang, and Y. Polyanskiy, “Efficient representation of large-alphabet probability distributions,” *IEEE J. Sel. Areas Information Theory*, vol. 3, no. 4, pp. 651–663, Dec. 2022
- A. Block, Z. Jia, Y. Polyanskiy, and A. Rakhlin, “Rate of convergence of the smoothed empirical Wasserstein distance,” *arXiv:2205.02128*, May. 2022
- G. Bresler, C. Guo, and Y. Polyanskiy, “Linear programs with polynomial coefficients and applications to 1D cellular automata,” *arXiv:2204.06357*, Apr. 2022
- J. Tang and Y. Polyanskiy, “Capacity of noisy permutation channels,” *IEEE Trans. Information Theory*, vol. 69, no. 7, pp. 4145–4162, Jul. 2023
- Y. Polyanskiy and Y. Wu, “Sharp regret bounds for empirical Bayes and compound decision problems,” *arXiv:2109.03943*, Sep. 2021
- A. Block, Z. Jia, Y. Polyanskiy, A. Rakhlin, “Intrinsic dimension estimation using Wasserstein distances,” *J. Machine Learning Research (JMLR)*, 23(313):1-37, 2022.
- E. Abbe, E. Cornacchia, Y. Gu and Y. Polyanskiy, “Stochastic block model entropy and broadcasting on trees with survey,” *Proc. Conf. on Learning Theory (COLT-2021)*, Aug. 2021. **Best Student Paper Award**
- M. Feder and Y. Polyanskiy, “Sequential prediction under log-loss and misspecification,” *Proc. Conf. on Learning Theory (COLT-2021)*, Aug. 2021.

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- A. Makur, E. Mossel and Y. Polyanskiy, “Broadcasting on two-dimensional regular grids,” *IEEE Trans. Information Theory*, vol. 68, no. 10, pp. 6297–6334, Oct. 2022
- O. Ordentlich and Y. Polyanskiy, “Strong data processing constant is achieved by binary inputs,” *IEEE Trans. Information Theory*, vol. 68, no. 3, pp. 1480–1481, Mar. 2022
- Y. Polyanskiy and Y. Wu, “Self-regularizing property of nonparametric maximum likelihood estimator in mixture models,” *arXiv:2008.08244*, Aug. 2020
- Y. Polyanskiy and Y. Wu, “Note on approximating the Laplace transform of a Gaussian on a complex disk,” *arXiv:2008.13372*, Aug. 2020
- J. Gaudio and Y. Polyanskiy, “Attracting random walks,” *Elect. J. Probability*, vol. 25, no. 73, 2020
- S. Jana, Y. Polyanskiy and Y. Wu, “Extrapolating the profile of a finite population,” *Proc. Conf. on Learning Theory (COLT-2020)*, Jul. 2020.
- Y. Gu and Y. Polyanskiy, “Non-linear log-Sobolev inequalities for the Potts semigroup and applications to reconstruction problems,” *arXiv:2005.05444*, May 2020
- Z. Goldfeld and Y. Polyanskiy, “The information bottleneck problem and its applications in machine learning,” *IEEE Journal Sel. Areas Information Theory (JSAIT)*, vol. 1, no. 1, pp. 19–38, Apr. 2020.
- H. Roozbehani and Y. Polyanskiy, “Low density majority codes and the problem of graceful degradation,” *arXiv:1911.12263*, Nov. 2019
- Y. Wu, X. Gao, S. Zhou, W. Yang, Y. Polyanskiy, and G. Caire, “Massive access for future wireless communication systems,” *IEEE Wireless Communications*, vol. 27, no. 4, pp. 148–156, Apr. 2020
- O. Ordentlich, Y. Polyanskiy and O. Shayevitz, “A note on the probability of rectangles for correlated binary strings,” *IEEE Trans. Information Theory*, vol. 66, no. 12, pp. 7878 – 7886, Dec. 2020.
- S. Kowshik, K. Andreev, A. Frolov and Y. Polyanskiy, “Energy efficient coded random access for the wireless uplink,” *IEEE Trans. Comm.*, vol. 68, no. 8, pp. 4694–4708, Aug. 2020
- Z. Goldfeld, K. Greenewald, Y. Polyanskiy, and J. Weed, “Convergence of smoothed empirical measures with applications to entropy estimation,” *IEEE Trans. Information Theory*, vol. 66, no. 7, pp. 4368–4391, Jul. 2020.
- Y. Polyanskiy and Y. Wu, “Dualizing Le Cam’s method, with applications to estimating the unseens,” *arXiv:1902.05616*, Feb. 2019.
- Y. Kochman, O. Ordentlich and Y. Polyanskiy, “A lower bound on the expected distortion of joint source-channel coding,” *IEEE Trans. Information Theory*, vol. 66, no. 8, pp. 4722–4741, Aug. 2020.
- U. Hadar, J. Liu, Y. Polyanskiy and O. Shayevitz, “Communication complexity of estimating correlations,” *Proc. 51st ACM Symp. on Theory of Comp. (STOC)*, Phoenix, AZ, Jun. 2019.
- S. Kowshik and Y. Polyanskiy, “Fundamental limits of many-user MAC with finite payloads and fading,” *IEEE Trans. Information Theory*, vol. 67, no. 9, pp. 5853–5884, Sep. 2021.
- A. Bhatt, B. Nazer, O. Ordentlich and Y. Polyanskiy, “Information-distilling quantizers,” *IEEE Trans. Information Theory*, vol. 67, no. 4, pp. 2472–2487, Apr. 2021.
- A. Makur, E. Mossel and Y. Polyanskiy, “Broadcasting on random directed acyclic graphs,” *IEEE Trans. Information Theory*, vol. 66, no. 2, pp. 780–812, Feb. 2020.
- Y. Sun, Y. Polyanskiy and E. Uysal-Biyikoglu, “Sampling of the Wiener process for remote estimation over a channel with random delay,” *IEEE Trans. Information Theory*, vol. 66, no. 2, pp. 1118–1135, Feb. 2020.
- Z. Goldfeld, E. van den Berg, K. Greenewald, I. Melnyk, N. Nguyen, B. Kingsbury and Y. Polyanskiy, “Estimating information flow in deep neural networks,” *Proc. 36th Int. Conf. Machine Learning (ICML’2019)*, Long Beach, CA, June 2019.
- Y. Polyanskiy and Y. Wu, “Application of information-percolation method to reconstruction problems on graphs,” *Math. Stat. Learn.*, vol. 2, no. 1, pp. 1–24, 2019.
- Z. Goldfeld, G. Bresler and Y. Polyanskiy, “Information storage in the stochastic Ising model,” *IEEE Trans. Information Theory*, vol. 67, no. 3, pp. 1373–1399, Mar. 2021

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- N. Alon, B. Bukh and Y. Polyanskiy, "List-decodable zero-rate codes," *IEEE Trans. Information Theory*, vol. 65, no. 3, pp. 1657–1667, Mar. 2019
- W. Yang, A. Collins, G. Durisi, Y. Polyanskiy, and H. V. Poor, "Beta-Beta bounds: finite-blocklength analog of the golden formula," *IEEE Trans. Information Theory*, vol. 64, no. 9, pp. 6236–6256, Sep. 2018.
- A. Collins and Y. Polyanskiy, "Coherent multiple-antenna block-fading channels at finite block-length," *IEEE Trans. Information Theory*, vol. 65, no. 1, pp. 380–405, Jan. 2019.
- Y. Polyanskiy, A. T. Suresh and Y. Wu, "Sample complexity of population recovery," *Proc. Conf. on Learning Theory (COLT-2017)*, Jul. 2017.
- M. Dalai and Y. Polyanskiy, "Bounds on the reliability function of typewriter channels," *IEEE Trans. Information Theory*, vol. 64, no. 9, pp. 6208–6222, Sep. 2018.
- J. Tang, D. Wang, Y. Polyanskiy and G. Wornell, "Defect tolerance: fundamental limits and examples," *IEEE Trans. Information Theory*, vol. 64, no. 7, pp. 5240–5260, Jul. 2018.
- A. Makur and Y. Polyanskiy, "Comparison of channels: criteria for domination by a symmetric channel," *IEEE Trans. Information Theory*, vol. 64, no. 8, pp. 5704–5725, Aug. 2018.
- Y. Polyanskiy and A. Samorodnitsky, "Improved log-Sobolev inequalities, hypercontractivity and uncertainty principle on the hypercube," *J. Functional Analysis*, vol. 277, no. 11, Dec. 2019.
- F. P. Calmon, Y. Polyanskiy and Y. Wu, "Strong data processing inequalities for input constrained additive noise channels," *IEEE Trans. Information Theory*, vol. 64, no. 3, pp. 1879–1892, Mar. 2018.
- Y. Polyanskiy and Y. Wu, "Strong data-processing inequalities for channels and Bayesian networks," In *Convexity, Concentration and Discrete Structures*, part of *The IMA Volumes in Mathematics and its Applications*, vol. 161, Springer-Verlag, New York, 2017.
- M. Dalai and Y. Polyanskiy, "Bounds for codes on pentagon and other cycles," *arXiv:1508.03020*, Aug. 2015
- W. Yang, G. Durisi and Y. Polyanskiy, "Minimum energy to send  $k$  bits over multiple-antenna fading channels," *IEEE Trans. Information Theory*, vol. 62, no. 12, pp. 6831–6853, Dec. 2016.
- Y. Polyanskiy and Y. Wu, "Wasserstein continuity of entropy and outer bounds for interference channels," *IEEE Trans. Information Theory*, vol. 62, no. 7, pp. 3992–4002, Jul. 2016.
- Y. Polyanskiy, "On metric properties of maps between Hamming spaces and related graph homomorphisms," *J. Combin. Theory Ser. A*, vol. 145, pp. 227–251, 2017.
- V. Kostina, Y. Polyanskiy and S. Verdú, "Joint source-channel coding with feedback," *IEEE Trans. Information Theory*, vol. 63, no. 6, pp. 3502–3515, Jun 2017.
- G. Durisi, T. Koch, J. Östman, Y. Polyanskiy and W. Yang, "Short-packet communications with multiple antennas: transmit diversity, spatial multiplexing, and channel estimation overhead," *IEEE Trans. Comm.*, vol. 64, no. 2, pp. 618–629, Feb. 2016
- H. Roozbehani and Y. Polyanskiy, "Algebraic methods of classifying directed graphical models," *arXiv:1401.5551*, Dec. 2014
- Y. Polyanskiy, "Upper bound on list-decoding radius of binary codes," *IEEE Trans. Information Theory*, vol. 62, no. 3, pp. 1119–1128, Mar. 2016.
- W. Yang, G. Caire, G. Durisi and Y. Polyanskiy, "Optimum power control at finite blocklength," *IEEE Trans. Information Theory*, vol. 61, no. 9, pp. 4598–4615, Sep. 2015.
- Y. Polyanskiy and Y. Wu, "Dissipation of information in channels with input constraints," *IEEE Trans. Information Theory*, vol. 62, no. 1, pp. 35–55, Jan. 2016.
- V. Kostina, Y. Polyanskiy and S. Verdú, "Variable-length compression allowing errors," *IEEE Trans. Information Theory*, vol. 61, no. 8, pp. 4316–4330, Aug. 2015.
- W. Yang, G. Durisi, T. Koch and Y. Polyanskiy, "Quasi-static multiple-antenna fading channels at finite blocklength," *IEEE Trans. Information Theory*, vol. 60, no. 7, pp.4232–4265, Jul. 2014.
- Y. Polyanskiy, "Hypercontractivity of spherical averages in Hamming space," *SIAM J. Disc. Math.*, vol. 33, no. 2, pp. 731–754, 2019.
- Y. Polyanskiy and Y. Wu, "Peak-to-average power ratio of good codes for Gaussian channel," *IEEE Trans. Information Theory*, vol. 60, no. 12, pp. 7655–7660, Dec 2014.

- A. Makhdoumi, S.-L. Huang, M. Médard and Y. Polyanskiy, "On locally decodable source coding," *arXiv:1308.5239*, Aug. 2013.
- Y. Polyanskiy, "Hypothesis testing via a comparator and hypercontractivity," *preprint*, Feb. 2013.
- Y. Polyanskiy, "Saddle point in the minimax converse for channel coding," *IEEE Trans. Information Theory*, vol. 59, no. 5, pp. 2576-2595, May 2013.
- Y. Polyanskiy and S. Verdú, "Empirical distribution of good channel codes with non-vanishing error probability," *IEEE Trans. Information Theory*, vol. 60, no. 1, pp. 5-21, Jan. 2014.
- Y. Polyanskiy, "Asynchronous communication: exact synchronization, universality, and dispersion," *IEEE Trans. Information Theory*, *IEEE Trans. Information Theory*, vol. 59, no. 3, pp. 1256-1270, Mar. 2013.
- Y. Polyanskiy, H. V. Poor and S. Verdú, "Feedback in the non-asymptotic regime," *IEEE Trans. Information Theory*, vol. 57, no. 8, pp. 4903 - 4925, Aug. 2011.
- Y. Polyanskiy, H. V. Poor and S. Verdú, "Minimum energy to send  $k$  bits through the Gaussian channel with and without feedback," *IEEE Trans. Information Theory*, vol. 57, no. 8, pp. 4880 - 4902, Aug. 2011.
- Y. Polyanskiy, H. V. Poor and S. Verdú, "Dispersion of the Gilbert-Elliott channel," *IEEE Trans. Information Theory*, vol. 57, no. 4, pp. 1829-1848, Apr. 2011.
- Y. Polyanskiy, H. V. Poor and S. Verdú, "Channel coding rate in the finite blocklength regime," *IEEE Trans. Information Theory*, vol. 56, no. 5, pp. 2307-2359, May 2010.
- V. Gorokhov, G. Popelnukha, G. Polyanskiy, Y. Polyanskiy, V. Tsukanov, Russian Federation Patent №31061 (RU), "Switchboard for managing submersible electric motors," Jul. 10, 2003.

## Awards

- 2020** James L. Massey Award (IEEE Information Theory Society)
- 2020** Amazon Scholar
- 2016** Jerome H. Saltzer Teaching Award (MIT EECS)
- 2015** Simons-Berkeley Research Fellowship
- 2013** NSF CAREER Award
- 2011** IEEE Information Theory Best Paper Award
- 2010** Best Student Paper Award at *2010 IEEE Int. Symp. Information Theory (ISIT)*
- 2009** Harold W. Dodds Fellowship (Princeton University Honorific Fellowship)
- 2008** Best Student Paper Award at *2008 IEEE Int. Symp. Information Theory (ISIT)*

## Awards (group)

- 2022** *Jennifer Tang*: Best Student Paper Award at *2022 IEEE Int. Symp. Information Theory (ISIT)*
- 2021** *Yuzhou Gu*: Best Student Paper Award at *2021 Conf. Learning Th. (COLT)*
- 2021** *Anuran Makur*: Thomas M. Cover Dissertation Award from *IEEE Inform. Theory Society*
- 2016** *Jennifer Tang*: Shannon Centennial Student Competition Winner from *Bell Labs*

## Work Experience

2022-now MIT, Professor of EECS

2019-2020 EPFL, Visiting Professor, School of Computer and Comm. Sciences (IC)

2015-2022 MIT, Associate Professor of EECS

2012-2015 MIT, Robert J. Shillman Career Development Professor of EECS

2011-2012 MIT, Assistant Professor of EECS

2010-2011 PRINCETON UNIVERSITY, Postdoctoral Research Associate (Sponsor: S. Verdú)

2005-2010 PRINCETON UNIVERSITY, Assistant-in-Research, Assistant-in-Instruction

## Invited Talks

- “Information measures and their applications in statistical learning (tutorial),” *2023 North-American School of Information Theory (NASIT)*, U. Pennsylvania, Philadelphia, PA, Jun. 2023
- “Information theoretic methods for SBM, BOT, HSBM and BOHT,” *GRAMSIA: Graphical Models, Statistical Inference, and Algorithms*, Center of Math. Sci. Appl. (CMSA), Harvard U., Cambridge, MA, May 2023
- “Likelihood-free hypothesis testing,” *Optimization and Statistical Learning*, Les Houches, France, Jan. 2023.
- “Empirical Bayes estimators for Poisson and normal means,” *ELLIS Seminar*, Institute of Science and Technology, Klosterneuburg, Austria, May 2022.
- , *Statistics Colloquium*, Dept. of Statistics, Harvard University, Cambridge, MA, Apr. 2022.
- “Information propagation in low dimensions,” *New Frontiers: Interactions between Quantum Physics and Mathematics*, Harvard University, Cambridge, MA, Jun. 2022
- “Uniqueness of BP fixed point for Ising models,” *FIND Seminar*, Dept. of ECE, Cornell University, Dec. 2022.
- , *Learning in Networks: Performance Limits and Algorithms*, Casa Matemática Oaxaca (CMO), Oaxaca, Mexico, Nov. 2022.
- , *New Mathematical Techniques in Information Theory*, Oberwolfach Research Institute of Math., Germany, Mar. 2022.
- , *Bernoulli Center Seminar*, EPFL, Lausanne, Switzerland, Feb. 2022.
- , *Math Picture Language Seminar*, Harvard University, Cambridge, MA, Feb. 2022
- “Rates of convergence of Gaussian smoothed empirical measures in Wasserstein and KL distances”, *BLISS Seminar*, UC Berkeley, CA, Feb. 2022.
- “Coding problems in unsourced MAC model,” *Keynote at 11th Int. Symp. Topics in Coding (ISTC’2021)*, Montreal, Canada, Aug. 2021
- “Unsourced Multiple Access (UMAC): Information Theory and Coding (tutorial),” *IEEE Int. Symp. Information Theory (ISIT)*, Melbourne, Australia, Jul. 2021.
- “Self-regularizing property of nonparametric maximum likelihood estimator in mixture models,” *Statistics and Stochastics Seminar*, MIT, Cambridge, MA, Feb. 2021.
- , *ICE Speaker Series*, Inst. Comm. Engineering, TU-Munich, Germany, Dec. 2020.
- , *MaD+ Seminar series*, ETH Zurich & NYU Courant Institute, Dec. 2020
- , *Statistics seminar*, Université Grenoble Alpes, Grenoble, France, Nov. 2020
- “Optimal minimax rates in empirical Bayes and estimation of the unseen,” *Amazon Research Seminar*, Amazon Inc., Seattle, WA, Feb 2020.
- “Remarks on algorithms for massive random access,” *DLR-MIT-TUM Workshop on Coding and Random Access*, Oberpfaffenhofen, Germany, Feb. 2020.
- “Reconstruction on trees via information theory,” *From local to global information (CSoI Workshop)*, Honolulu, HI, Feb 2020.
- “Information and inference on trees,” *Information Theory and Applications (ITA)*, San Diego, CA, Feb 2020.
- “Smoothed empirical measures and entropy estimation” *CREST Statistics Seminar*, Center for Research in Economics and Statistics, ENSAE, Paris, France, Sep. 2019
- , *Estimation of entropies and other functionals: Statistics meets information theory*, Statistical Laboratory, U. of Cambridge, Cambridge, UK, Sep. 2019.
- , *CDISE Seminar*, SkolTech Inst, Moscow, Russia, Jul. 2019
- “Multiple access with finite payloads and many users,” *L’École Télécom Paris*, Paris, France, Jan. 2020
- , *IPG Seminar*, Information Processing Group, EPFL, Lausanne, Switzerland, Oct. 2019
- , *Colloquium*, German Aerospace Center (DLR), Munich, Germany, Oct. 2019
- , *MoTION workshop*, IEEE Wireless Comm. Netw. Conf. (WCNC), Marrakech, Morocco, Apr. 2019

- , *EE-Systems Seminar*, Dept. of EE, Caltech, Pasadena, CA, Feb 2019.
- , *Information Theory and Applications (ITA)*, San Diego, CA, Feb 2019.
- , *Qualcomm NJ Research Center*, Qualcomm, Bridgewater, NJ, Jan 2019.
- “Communication complexity of estimating correlations,” *Theory of Computer Science Seminar*, EPFL, Sep. 2019
- , *Center for Data Science (CDISE)*, Skoltech, Skolkovo, Russia, Jan. 2019
- “Partition functions and massive multiple-access,” *Workshop on Applications of Partition Functions*, Bernoulli Center, EPFL, Lausanne, CH, Nov 2018.
- “Information-theoretic perspective on massive multiple-access (tutorial),” *2018 North-American School of Information Theory*, Texas A&M University, College Station, TX, May 2018.
- , *short course*, SkolTech Inst. Of Tech., Moscow, Russia, Jul. 2018.
- “Tight sample complexity bounds via dualizing LeCam’s method,” *MSR Talk Series*, Microsoft Research, Redmond, WA, Aug 2018.
- , *Joint Statistics Meeting (JSM’2018)*, Vancouver, CA, Jul 2018.
- , *ISL IT Forum*, Stanford University, Stanford, CA, May 2018.
- , *Joint PACM-EE Colloquium*, Princeton University, Princeton, NJ, Apr. 2018
- “Broadcasting on directed acyclic graphs,” *Probability Seminar*, MIT, Cambridge, MA, May 2018.
- , *Real-Time Decision Making Program*, Simons Inst., Berkeley, CA, May 2018
- “Energy-Efficiency and Random-Access,” *NSF Workshop on Low-Latency Wireless Random Access*, MIT, Cambridge, MA, Nov. 2017.
- , *55th Allerton Conference on Communications and Control*, U. of Illinois, USA, Oct. 2017.
- “Sample complexity of population recovery,” *Stochastics and Statistics Seminar*, IDSS, MIT, Sep. 2017.
- , *ECE Seminar*, U. of Maryland (College Park), Oct. 2017.
- “Zero-rate list-decodable codes in Hamming and Euclidean spaces,” *Center for Data Science (CDISE)*, Skoltech, Skolkovo, Russia, Aug. 2017
- “Fundamental limits and schemes for random-access in wireless channels,” Institute for Communications Engineering (LNT), T.U.-München, Munich, Germany, Jul. 2017.
- , *Theoretische Grundlagen der Kommunikationstechnik (CommIT)*, T.U.-Berlin, Berlin, Germany, Jun. 2017.
- “On maps between Hamming spaces that expand pairwise distances,” *Seminar*, School of Computer and Communication Sciences, EPFL, Switzerland, Apr. 2017.
- “Codes for MAC in communication and digital right management,” *Shaping the Future: Big Data, Biomedicine and Frontier Technologies (MIT-Skoltech Symposium)*, Skoltech, Skolkovo, Russia, Apr. 2017
- “Strong data processing inequalities for channels and Bayesian networks,” *Beyond I.I.D.*, Institut d’Estudis Catalans, Barcelona, Spain, Jul. 2016.
- “Uncertainty principle and stronger hypercontractivity on the hypercube,” *Information Theory and Applications (ITA)*, San Diego, CA, Feb. 2017.
- , *Mathematics, Theoretical Physics and Data Science (Sinai-Margulis Conference)*, Moscow Indep. Univ., Moscow, Jul. 2016.
- , *2016 SIAM Conf. Discr. Math (DM-16)*, Georgia State Univ., Atlanta, GA, Jun. 2016.
- “Finite blocklength information theory (tutorial),” *2016 European School of Information Theory*, Chalmers University, Gothenburg, Sweden, Apr. 2016.
- “Asymptotics of codes in strong products of graphs,” *Bassalygo seminar*, Inst. of Information Transmission Problems (IITP), Moscow, Russia, Jan. 2016.
- “Coupling, entropy and Costa’s corner-point conjecture,” *LIDS Seminar*, MIT, Cambridge, MA, Nov. 2015
- “Graph homomorphisms, Schrijver’s theta-function and maps between Hamming spaces,” *Seminar*, Simons Inst. for the Theory of Computing, Berkeley, CA, Feb. 2015.
- , *Jerusalem Combinatorics Seminar*, Hebrew University (HUJI), Jerusalem, Israel, Apr. 2015.

- , *Systems of Lines: Algebraic Combinatorics*, WPI, Worcester, MA, Aug. 2015.
- “Finite blocklength information theory of wireless channels,” *Seminar*, Univ. of California, San Diego, CA, Apr. 2015
- , *ISL Colloquium*, Stanford Univ., Stanford, CA, Apr. 2015
- “Wasserstein continuity of entropy and outer bounds for interference channels,” *Inform. Theory Forum*, Stanford Univ., Stanford, CA, Apr. 2015
- , *Seminar*, Dept. of EE, Tel-Aviv Univ., Tel-Aviv, Israel, May 2015.
- “Upper bound on list-decoding radius of binary codes,” *Workshop on Information Theory in Complexity Theory and Combinatorics*, Simons Institute for the Theory of Computing, Berkeley, CA, Apr. 2015.
- “Energy and spectral efficiency in fading channels,” *2015 Information Theory Workshop (ITW)*, Jerusalem, Israel, Apr. 2015.
- “Short packet communication over wireless links,” *MIT Wireless Center 5G Day*, Wireless @ MIT, MIT, Cambridge, MA, May 2015
- “Dissipation of information in channels with input constraints”, Dept. of EE, U. of Hawaii, Honolulu, HI, Jun 2014.
- , *Theory Group Seminar*, Microsoft Research, Redmond, WA, May 2014.
- , *Beyond I.I.D.*, Centre for Quantum Tech., NUS, Singapore, May 2014.
- , *Charles River Science of Information Day*, MIT, Cambridge, MA, Apr 2014.
- S. Verdú “Finite blocklength methods in information theory (tutorial)”, ISIT’2013, Istanbul, Turkey, Jul 2013.
- “Finite blocklength methods in channel coding”, Chalmers Univ., Gothenburg, Sweden, Jul 2013
- “Hypercontractivity of spherical averages in Hamming space,” *Theory Group Seminar*, Microsoft Research New England, Cambridge, MA, USA, Jun 2013.
- “On asynchronous capacity and dispersion,” *LIDS Advisory Committee Meeting*, MIT, Cambridge, MA, USA, Apr. 2012.
- “Optimal channel codes and concentration of measure,” Th. of Computation Colloquium, EECS, MIT, Cambridge, MA, Oct. 2011.
- “On the properties of optimal codes,” Alcatel-Lucent Bell Labs, NJ, Jun. 2011.
- “Data transmission: non-asymptotic fundamental limits,” Dept. of ECE, U. of Texas, Austin, TX, Apr. 2011.
- , ITA Center, UCSD, San Diego, CA, Apr. 2011.
- , Dept. of EE, USC, Los Angeles, CA, Mar. 2011.
- , Dept. of EECS, MIT, Cambridge, MA, Mar. 2011.
- , Dept. of EE, Columbia University, NY, Mar. 2011.
- “Channel coding: non-asymptotic fundamental limits,” Texas Instruments, Dallas, TX, Aug. 2012.
- , U. of Illinois at Urbana-Champaign (UIUC), IL, Feb. 2011.
- , U. of Southern California, Los Angeles, CA, Feb. 2011.
- , Research Laboratory of Electronics (RLE), MIT, Cambridge, MA, Jan. 2011
- , Polytechnical Institute of New York University (NYU-Poly), NY, Dec. 2010.
- , Alcatel-Lucent Bell Labs, NJ, Dec. 2010.
- , Cornell University, Ithaca, NY, Nov. 2010.
- “Achievability bounds in the regime of fixed probability of error”, U. of Maryland, College Park, MD, Nov. 2009



## Conference Proceedings

- A. Teh and Y. Polyanskiy, “Comparing Poisson and Gaussian channels,” *2023 IEEE Int. Symp. Information Theory (ISIT)*, Taipei, Taiwan, Jun. 2023.
- A. Fengler, A. Lancho, K. Narayanan, and Y. Polyanskiy, “On the advantages of asynchrony in the unsourced MAC,” *2023 IEEE Int. Symp. Information Theory (ISIT)*, Taipei, Taiwan, Jun. 2023.
- Q. Yu and Y. Polyanskiy, “Uniqueness of distributional BP fixed point in Ising model on trees,” *2023 IEEE Int. Symp. Information Theory (ISIT)*, Taipei, Taiwan, Jun. 2023.
- G. Lee, A. Weiss, A. Lancho, Y. Polyanskiy, and G. Wornell, “On neural architectures for deep learning-based source separation of co-channel OFDM signals,” *IEEE ICASSP 2023*, Greece, Jun. 2023
- A. Fengler, G. Liva and Y. Polyanskiy, “Sparse graph codes for the 2-user unsourced MAC,” *2022 Asilomar Conf. Sig. Syst. Comp.*, Pacific Grove, CA, USA, Nov. 2022
- A. Lancho, A. Weiss, G. Lee, J. Tang, Y. Bu, Y. Polyanskiy, and G. Wornell, “Data-driven blind synchronization and interference rejection for digital communication signals,” *IEEE GLOBECOM 2022*, Rio de Janeiro, Brazil, Dec. 2022
- A. Lancho, A. Fengler and Y. Polyanskiy, “Finite-blocklength results for the A-channel: applications to unsourced random access and group testing”, *58th Allerton Conference*, U. Illinois, IL, USA, Sep. 2022
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