

Jonathan Scarlett

Curriculum Vitae

PERSONAL DETAILS

Contact Address:

National University of Singapore
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15 Computing Drive, Singapore 117418

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RESEARCH INTERESTS

I am interested in theoretical and algorithmic aspects of statistical inference, learning, and optimization, with a particular emphasis on information-theoretic methods. Further information can be found at <https://www.comp.nus.edu.sg/~scarlett/research.html>.

EDUCATION

Ph.D.

October 2011 – August 2014

University of Cambridge, Information Engineering Division

Thesis title: *Reliable Communication Under Mismatched Decoding***B. Eng. / B. Sci.**

March 2006 – November 2010

University of Melbourne

Majored in Electrical Engineering and Computer Science

EMPLOYMENT HISTORY

National University of Singapore

January 2018 – Present

*Tenure-track Assistant Professor**(NUS Presidential Young Professor since Oct. 2021)*

Departments: Joint appointment, Computer Science & Mathematics

École Polytechnique Fédérale de Lausanne (EPFL)

September 2014 – September 2017

Post-doctoral Fellow

Group: Laboratory for Information and Inference Systems (LIONS)

Topic: Machine learning (high-dimensional statistics, online optimization)

Supervisor: Volkan Cevher

University of Cambridge

October 2011 – August 2014

Research and Teaching Assistant

Group: Signal Processing and Communications

Topic: Information theory (mismatched decoding, non-asymptotic performance)

Supervisor: Albert Guillén i Fàbregas

FUNDING

- Singapore National Research Foundation (NRF) Fellowship** May 2019 – May 2024
Title: Robust statistical learning under model uncertainty
Amount: SGD 2.3M
- NUS Early Career Research Award** November 2018 – November 2022
Title: Information-theoretic methods in data science
Amount: SGD 500k
- NUS Startup Grant** January 2018 – January 2022
Title: Theoretical and algorithmic advances in noisy adaptive group testing
Amount: SGD 180k
- EPFL Fellows co-funded by Marie Skłodowska-Curie** May 2015 – April 2017
Title: Theoretical foundations of high-dimensional inference for non-linear models
Amount: CHF 100k

TEACHING

National University of Singapore

- *Advanced Topics in Machine Learning* (Department of Computer Science) 2021
- *Theory and Algorithms for Machine Learning* (Department of Computer Science) 2021
- *Introduction to Information Theory* (Department of Computer Science) 2019–2020
- *Data Modeling and Computation* (Department of Mathematics) 2018–2020, 2022

AWARDS

- NUS CS Faculty Teaching Excellence Award 2022
- NUS Presidential Young Professorship 2021
- MIT Technology Review's Innovators Under 35 (Asia Pacific) 2021
- Finalist for the ISIT student paper award 2014 (student), 2021 (supervisor)
- Outstanding reviewer achievement, ICML ($\times 3$) & NeurIPS ($\times 2$) 2018–2022
- Singapore National Research Foundation (NRF) Fellowship 2019
- NUS Early Career Research Award 2018
- EPFL Fellows postdoctoral award co-funded by Marie Skłodowska-Curie 2015
- Poynton Cambridge Australia International Scholarship 2011
- Top student in Electrical Engineering, University of Melbourne 2010

PROFESSIONAL ACTIVITIES

Tutorial Presentations

- ICASSP tutorial (group testing and its application to COVID-19 testing) June 2021
- Croucher Summer Course on Information Theory (info. theory & statistical learning) July 2019

Selected Invited Talks

- One World MINDS (online seminar) Sept. 2021
- MIT (online seminar) May 2021
- Goethe University Frankfurt (online seminar) Jan. 2021
- International Conference on Signal Processing and Communications July 2020
- London Symposium on Information Theory May 2019
- Information Theory and Applications Workshop Feb. 2014, 2015, 2017, 2019
- Imperial College London June 2018

Organization

- ALT 2023 conference senior program committee Upcoming
- ALT 2023 conference organizing committee (local chair) Since April 2022
- NeurIPS conference area chair 2021, 2022
- Assistant Director of PhD Program, Institute for Data Science, NUS Since May 2021
- AAAI conference senior program committee 2021
- Beyond IID in Information Theory Workshop program committee 2021
- ISIT technical program committee 2020, 2021, 2023
- ITW technical program committee 2016, 2020, 2022
- ISIT organizing committee (student travel grants) 2016

PUBLICATIONS

Monographs and Book Chapters

- [B3] Matthew Aldridge, Oliver Johnson, and Jonathan Scarlett, “Group testing: An information theory perspective,” *Foundations and Trends in Communications and Information Theory*, Volume 15, Issue 3–4, pp. 196–392, Dec. 2019.
- [B2] Jonathan Scarlett, Albert Guillén i Fàbregas, Anelia Somekh-Baruch, and Alfonso Martinez, “Information-theoretic foundations of mismatched decoding”, *Foundations and Trends in Communications and Information Theory*, Volume 17, Issue 2–3, pp. 149–400, Aug. 2020.
- [B1] Jonathan Scarlett and Volkan Cevher, “An introductory guide to Fano’s inequality with applications in statistical estimation,” book chapter in *Information-Theoretic Methods in Data Science* (Rodrigues/Eldar), Cambridge University Press, 2021.

Patents

- [P1] Volkan Cevher, Yen-Huan Li, Luca Baldassarre, Jonathan Scarlett, Ilija Bogunovic, and Baran Gözcü, “Learning-based subsampling,” US-14/887,295.

Journal Papers

- [J32] Nelvin Tan, Way Tan, and Jonathan Scarlett, “Performance bounds for group testing With doubly-regular designs,” accepted to *IEEE Transactions on Information Theory*, 2022.
- [J31] Yan Hao Ling and Jonathan Scarlett, “Simple coding techniques for many-hop relaying,” accepted to *IEEE Transactions on Information Theory*, 2022.
- [J30] Oliver Gebhard, Max Hahn-Klimroth, Olaf Parczyk, Manuel Penschuck, Maurice Rolvien, Jonathan Scarlett, and Nelvin Tan, “Near optimal sparsity-constrained group testing: Improved bounds and algorithms,” *IEEE Transactions on Information Theory*, Volume 68, Issue 5, pp. 3253-3280, May 2022.
- [J29] Bernard Teo and Jonathan Scarlett, “Noisy adaptive group testing via noisy binary search,” *IEEE Transactions on Information Theory*, Volume 68, Issue 5, pp. 3340-3353, May 2022.
- [J28] Wei Heng Bay, Eric Price, and Jonathan Scarlett, “Optimal non-adaptive probabilistic group testing in general sparsity regimes,” *Information and Inference: A Journal of the IMA*, Article iaab020, Feb. 2022.
- [J27] Zexin Wang, Vincent Tan, and Jonathan Scarlett, “Tight regret bounds for noisy optimization of a Brownian motion”, *IEEE Transactions on Signal Processing*, Volume 70, pp. 1072-1087, Jan. 2022
- [J26] Yan Hao Ling and Jonathan Scarlett, “Optimal rates of teaching and learning under uncertainty,” *IEEE Transactions on Information Theory*, Volume 67, Issue 11, pp. 7067-7080, Nov. 2021.
- [J25] Yang Sun, Hangdong Zhao, and Jonathan Scarlett, “On architecture selection for linear inverse problems with untrained neural networks,” *Entropy*, Volume 23, Issue 11, Article 1481, Nov. 2021.

- [J24] Steffen Bondorf, Binbin Chen, Jonathan Scarlett, Haifeng Yu, and Yuda Zhao, “Sublinear-time non-adaptive group testing with $O(k \log n)$ tests via bit-mixing coding,” *IEEE Transactions on Information Theory*, Volume 67, Issue 3, pp. 1559-1570, March 2021.
- [J23] Lan V. Truong, Matthew Aldridge, and Jonathan Scarlett, “On the all-or-nothing behavior of Bernoulli group testing,” *IEEE Journal on Selected Areas in Information Theory*, Volume 1, Issue 3, pp. 669-680, November 2020.
- [J22] Lan V. Truong and Jonathan Scarlett, “Support recovery in the phase retrieval model: Information theoretic fundamental limits,” *IEEE Transactions on Information Theory*, Volume 66, Issue 12, pp. 7887-7910, December 2020.
- [J21] Lan V. Truong and Jonathan Scarlett, “On gap-based lower bounding techniques for best-arm identification,” *Entropy*, Volume 22, Issue 7, Article 788, July 2020.
- [J20] Zhaoqiang Liu and Jonathan Scarlett, “Information-theoretic lower bounds for compressive sensing with generative models,” *IEEE Journal on Selected Areas in Information Theory*, Volume 1, Issue 1, pp. 292-303, May 2020.
- [J19] Jonathan Scarlett and Oliver Johnson, “Noisy non-adaptive group testing: A (near-)definite defectives approach,” *IEEE Transactions on Information Theory*, Volume 66, Issue 6, pp. 3775-3797, June 2020.
- [J18] Jonathan Scarlett, “Noisy adaptive group testing: Bounds and algorithms,” *IEEE Transactions on Information Theory*, Volume 65, Issue 6, pp. 3646–3661, June 2019.
- [J17] Anelia Somekh-Baruch, Jonathan Scarlett, and Albert Guillén i Fàbregas, “Generalized random Gilbert-Varshamov codes,” *IEEE Transactions on Information Theory*, Volume 65, Issue 6, pp. 3452–3469, June 2019.
- [J16] Oliver Johnson, Matthew Aldridge, and Jonathan Scarlett, “Performance of group testing algorithms with near-constant tests-per-item,” *IEEE Transactions on Information Theory*, Volume 65, Issue 2, pp. 707-723, Feb. 2019.
- [J15] Jonathan Scarlett and Volkan Cevher, “Near-optimal noisy group testing via separate decoding of items,” *IEEE Journal on Selected Topics in Signal Processing* (Special Issue on Information-Theoretic Methods in Data Acquisition, Analysis, and Processing), Volume 12, Issue 5, pp. 902-915, Oct. 2018.
- [J14] Baran Gözcü, Rabeeh Karimi Mahabadi, Yen-Huan Li, Efe Ilıcak, Tolga Çukur, Jonathan Scarlett, and Volkan Cevher, “Learning-based compressive MRI,” *IEEE Transactions on Medical Imaging* (Special Issue on Machine Learning for Image Reconstruction), Volume 37, Issue 6, pp. 1394–1406, June 2018.
- [J13] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Mismatched multi-letter successive decoding for the multiple-access channel,” *IEEE Transactions on Information Theory*, Volume 64, Issue 4, pp. 2253–2266, April 2018.
- [J12] Jonathan Scarlett and Volkan Cevher, “Limits on support recovery with probabilistic models: An information-theoretic framework,” *IEEE Transactions on Information Theory*, Volume 63, Issue 1, pp. 593–620, Jan. 2017.
- [J11] Jonathan Scarlett, Vincent Tan, and Giuseppe Durisi, “The dispersion of nearest-neighbor decoding for additive non-Gaussian channels,” *IEEE Transactions on Information Theory*, Volume 63, Issue 1, pp. 81–92, Jan. 2017.
- [J10] Jonathan Scarlett and Volkan Cevher, “On the difficulty of selecting Ising models with approximate recovery,” *IEEE Transactions on Signal and Information Processing over Networks*, Volume 2, Issue 4, pp. 625–638, July 2016.
- [J9] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Multiuser random coding techniques for mismatched decoding,” *IEEE Transactions on Information Theory*, Volume 62, Issue 7, pp. 3950–3970, July 2016.
- [J8] Luca Baldassarre, Yen-Huan Li, Jonathan Scarlett, Baran Gözcü, Ilija Bogunovic, and Volkan Cevher, “Learning-based compressive subsampling,” *IEEE Journal on Selected Topics in Signal Processing* (Special Issue on Structured Matrices in Signal and Data Processing), Volume 10, Issue 4, pp. 809-822, March 2016.

- [J7] Jonathan Scarlett and Vincent Tan, “Second-order asymptotics for the Gaussian MAC with degraded message sets,” *IEEE Transactions on Information Theory*, Volume 61, Issue 12, pp. 6700–6718, Dec. 2015.
- [J6] Jonathan Scarlett, Anelia Somekh-Baruch, Alfonso Martinez, and Albert Guillén i Fàbregas, “A counter-example to the mismatched decoding converse for binary-input discrete memoryless channels,” *IEEE Transactions on Information Theory*, Volume 61, Issue 10, pp. 5387–5395, Oct. 2015.
- [J5] Jonathan Scarlett, “On the dispersions of the Gel’fand-Pinsker channel and dirty paper coding,” *IEEE Transactions on Information Theory*, Volume 61, Issue 9, pp. 4569–4586, Sept. 2015.
- [J4] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Second-order rate region of constant-composition codes for the multiple-access channel,” *IEEE Transactions on Information Theory*, Volume 61, Issue 1, pp. 157–172, Jan. 2015.
- [J3] Jonathan Scarlett, Li Peng, Neri Merhav, Alfonso Martinez, and Albert Guillén i Fàbregas, “Expurgated random-coding ensembles: Exponents, refinements and connections,” *IEEE Transactions on Information Theory*, Volume 60, Issue 8, pp. 4449–4462, Aug. 2014.
- [J2] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Mismatched decoding: Error exponents, second-order rates and saddlepoint approximations,” *IEEE Transactions on Information Theory*, Volume 60, Issue 5, pp. 2647–2666, May 2014.
- [J1] Jonathan Scarlett, Jamie Evans, and Subhrakanti Dey, “Compressed sensing with prior information: Information-theoretic limits and practical decoders,” *IEEE Transactions on Signal Processing*, Volume 61, Issue 2, pp. 427–439, Jan. 2013.

Conference Papers (Full Length)

- [C33] Ilija Bogunovic, Zihan Li, Andreas Krause, and Jonathan Scarlett, “A robust phased elimination algorithm for corruption-tolerant Gaussian process bandits,” accepted to *Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
- [C32] Eric Han and Jonathan Scarlett, “Adversarial attacks on Gaussian process bandits,” *International Conference on Machine Learning (ICML)*, 2022.
- [C31] Sattar Vakili, Jonathan Scarlett, Da-shan Shiu, and Alberto Bernacchia, “Improved convergence rates for sparse approximation methods in kernel-based learning,” *International Conference on Machine Learning (ICML)*, 2022.
- [C30] Zhaoqiang Liu, Jiulong Liu, Subhroshekhar Ghosh, Jun Han, and Jonathan Scarlett, “Generative principal component analysis,” *International Conference on Learning Representations (ICLR)*, 2022.
- [C29] Zihan Li and Jonathan Scarlett, “Gaussian process bandit optimization with few batches,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.
- [C28] Zhenlin Wang and Jonathan Scarlett, “Max-Min Grouped Bandits,” *AAAI Conference on Artificial Intelligence*, 2022.
- [C27] Zhaoqiang Liu, Subhroshekhar Ghosh, and Jonathan Scarlett, “Towards sample-optimal compressive phase retrieval with sparse and generative priors,” *Conference on Neural Information Processing Systems (NeurIPS)*, 2021.
- [C26] Xu Cai and Jonathan Scarlett, “On lower bounds for standard and robust Gaussian process bandit optimization,” *International Conference on Machine Learning (ICML)*, 2021.
- [C25] Xu Cai, Selwyn Gomes, and Jonathan Scarlett, “Lenient regret and good-action identification in Gaussian process bandits,” *International Conference on Machine Learning (ICML)*, 2021.
- [C24] Ilija Bogunovic, Arpan Losalka, Andreas Krause, and Jonathan Scarlett, “Stochastic linear bandits robust to adversarial attacks,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2021.
- [C23] Eric Han, Ishank Arora, and Jonathan Scarlett, “High-dimensional Bayesian optimization via tree-structured additive models,” *AAAI Conference on Artificial Intelligence*, 2021.

- [C22] Zhaoqiang Liu and Jonathan Scarlett, “The generalized Lasso with nonlinear observations and generative priors,” *Conference on Neural Information Processing Systems (NeurIPS)*, 2020.
- [C21] Eric Price and Jonathan Scarlett, “A fast binary splitting approach to non-adaptive group testing,” *International Conference on Randomization and Computation (RANDOM)*, 2020.
- [C20] Zhaoqiang Liu, Selwyn Gomes, Avtansh Tiwari, and Jonathan Scarlett, “Sample complexity bounds for 1-bit compressive sensing and binary stable embeddings with generative priors,” *International Conference on Machine Learning (ICML)*, 2020.
- [C19] Abdul Fatir Ansari, Jonathan Scarlett, and Harold Soh, “A characteristic function approach to deep implicit generative modeling,” *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.
- [C18] Ilija Bogunovic, Andreas Krause, and Jonathan Scarlett, “Corruption-tolerant Gaussian process bandit optimization,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.
- [C17] Anamay Chaturvedi and Jonathan Scarlett, “Learning Gaussian graphical models via multiplicative weights,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2020.
- [C16] Bishwamittra Ghosh, Lorenzo Ciampiconi, Jonathan Scarlett, and Kuldeep Meel, “A MaxSAT-based framework for group testing,” *AAAI Conference on Artificial Intelligence*, 2020.
- [C15] Zihan Li, Matthias Fresacher, and Jonathan Scarlett, “Learning Erdős-Rényi random graphs via edge detecting queries,” *Conference on Neural Information Processing Systems (NeurIPS)*, 2019.
- [C14] Steffen Bondorf, Binbin Chen, Jonathan Scarlett, Haifeng Yu, and Yuda Zhao, “Cross-sender bit-mixing coding,” *Conference on Information Processing in Sensor Networks (IPSN)*, 2019.
- [C13] Ilija Bogunovic, Jonathan Scarlett, Stefanie Jegelka, and Volkan Cevher, “Adversarially robust optimization with Gaussian processes,” *Conference on Neural Information Processing Systems (NeurIPS)*, 2018. (**Spotlight presentation**)
- [C12] Jonathan Scarlett, “Tight regret bounds for Bayesian optimization in one dimension,” *International Conference on Machine Learning (ICML)*, 2018.
- [C11] Paul Rolland, Jonathan Scarlett, Ilija Bogunovic, and Volkan Cevher, “High-dimensional Bayesian optimization via additive models with overlapping groups,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2018.
- [C10] Jonathan Scarlett and Volkan Cevher, “Phase transitions in the pooled data problem,” *Conference on Neural Information Processing Systems (NeurIPS)*, 2017
- [C9] Ilija Bogunovic, Slobodan Mitrović, Jonathan Scarlett, and Volkan Cevher, “Robust submodular maximization: A non-uniform partitioning approach,” *International Conference on Machine Learning (ICML)*, 2017.
- [C8] Volkan Cevher, Michael Kapralov, Jonathan Scarlett, and Amir Zandieh (alphabetical), “An adaptive sublinear-time block sparse Fourier transform,” *ACM Symposium on Theory of Computing (STOC)*, 2017.
- [C7] Jonathan Scarlett, Ilija Bogunovic, and Volkan Cevher, “Lower bounds on regret for noisy Gaussian process bandit optimization,” *Conference on Learning Theory (COLT)*, 2017.
- [C6] Jonathan Scarlett and Volkan Cevher, “Lower bounds on active learning for graphical model selection,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2017.
- [C5] Ilija Bogunovic, Jonathan Scarlett, Andreas Krause, and Volkan Cevher, “Truncated variance reduction: A unified approach to Bayesian optimization and level-set estimation”, *Conference on Neural Information Processing Systems (NeurIPS)*, 2016.
- [C4] Jonathan Scarlett and Volkan Cevher, “Limits on sparse support recovery via linear sketching with random expander matrices,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2016.
- [C3] Ilija Bogunovic, Jonathan Scarlett, and Volkan Cevher, “Time-varying Gaussian process bandit optimization,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2016.

- [C2] Jonathan Scarlett and Volkan Cevher, “Phase transitions in group testing,” *ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2016.
- [C1] Yen-Huan Li, Jonathan Scarlett, Pradeep Ravikumar, and Volkan Cevher, “Sparsistency of ℓ_1 -regularized M -estimators,” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2015. (**Oral presentation**)

Conference Papers (Other)

- [O44] Yan Hao Ling and Jonathan Scarlett, “A simple coding scheme attaining positive information velocity,” *IEEE International Symposium on Information Theory (ISIT)*, 2022.
- [O43] Millen Kanabar and Jonathan Scarlett, “Multi-user random coding techniques for mismatched rate-distortion theory,” *IEEE International Symposium on Information Theory (ISIT)*, 2022.
- [O42] Thach V. Bui, Yeow Meng Chee, Jonathan Scarlett, and Van Khu Vu, “Group testing with blocks of positives,” *IEEE International Symposium on Information Theory (ISIT)*, 2022.
- [O41] Sidhant Bansal, Arnab Bhattacharyya, Anamay Chaturvedi, and Jonathan Scarlett, “Universal 1-bit compressive sensing for bounded dynamic range signals,” *IEEE International Symposium on Information Theory (ISIT)*, 2022.
- [O40] Yang Sun and Jonathan Scarlett, “Data-driven algorithms for Gaussian measurement matrix design in compressive sensing,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2022.
- [O39] Zhaoqiang Liu, Subhroshekhar Ghosh, and Jonathan Scarlett, “Robust 1-bit compressive sensing with partial Gaussian circulant matrices and generative priors,” *IEEE Information Theory Workshop (ITW)*, 2021.
- [O38] Yan Hao Ling and Jonathan Scarlett, “Optimal rates of teaching and learning under binary symmetric noise,” *IEEE International Symposium on Information Theory (ISIT)*, 2021. (**Finalist for the student paper award**)
- [O37] Nelvin Tan and Jonathan Scarlett, “An analysis of the DD algorithm for group testing with size-constrained tests,” *IEEE International Symposium on Information Theory (ISIT)*, 2021.
- [O36] Nelvin Tan and Jonathan Scarlett, “Near-optimal sparse adaptive group testing,” *IEEE International Symposium on Information Theory (ISIT)*, 2020.
- [O35] Zhaoqiang Liu and Jonathan Scarlett, “Sample complexity lower bounds for compressive sensing with generative models,” *International Conference on Signal Processing and Communications (SPCOM)*, 2020. (**Invited**)
- [O34] Lan V. Truong and Jonathan Scarlett, “On the information-theoretic limits of noisy sparse phase retrieval,” *IEEE Information Theory Workshop (ITW)*, 2019.
- [O33] Jonathan Scarlett, “An efficient algorithm for capacity-approaching noisy adaptive group testing,” *IEEE International Symposium on Information Theory (ISIT)*, 2019.
- [O32] Ilija Bogunovic, Jonathan Scarlett, and Volkan Cevher, “Overlapping multi-bandit best arm identification,” *IEEE International Symposium on Information Theory (ISIT)*, 2019.
- [O31] Anelia Somekh-Baruch, Jonathan Scarlett, and Albert Guillén i Fàbregas, “A recursive cost-constrained construction that attains the expurgated exponent,” *IEEE International Symposium on Information Theory (ISIT)*, 2019.
- [O30] Jonathan Scarlett and Volkan Cevher, “Near-optimal noisy group testing via separate decoding of items,” *IEEE International Symposium on Information Theory (ISIT)*, 2018.
- [O29] Anelia Somekh-Baruch, Jonathan Scarlett, and Albert Guillén i Fàbregas, “The error exponent of generalized random Gilbert-Varshamov codes,” *IEEE International Symposium on Information Theory (ISIT)*, 2018.

- [O28] Ilija Bogunovic, Slobodan Mitrović, Jonathan Scarlett, and Volkan Cevher, “A distributed algorithm for partitioned robust submodular maximization,” *IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, 2017.
- [O27] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Expurgated joint source-channel coding bounds and error exponents,” *IEEE International Symposium on Information Theory (ISIT)*, 2017.
- [O26] Jonathan Scarlett and Volkan Cevher, “How little does non-exact recovery help in group testing?,” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2017. **(Invited)**
- [O25] Jonathan Scarlett and Volkan Cevher, “Converse bounds for noisy group testing with arbitrary measurement matrices,” *IEEE International Symposium on Information Theory (ISIT)*, 2016.
- [O24] Jonathan Scarlett and Volkan Cevher, “Partial recovery bounds for the sparse stochastic block model,” *IEEE International Symposium on Information Theory (ISIT)*, 2016.
- [O23] Matthew Aldridge, Oliver Johnson, and Jonathan Scarlett, “Improved group testing rates with constant column weight designs,” *IEEE International Symposium on Information Theory (ISIT)*, 2016.
- [O22] Daniel Fehr, Jonathan Scarlett, and Alfonso Martinez, “Fixed-energy random coding with rescaled codewords at the transmitter,” *International Zürich Seminar on Communications (IZS)*, 2016.
- [O21] Jonathan Scarlett, Vincent Tan, and Giuseppe Durisi, “The dispersion of nearest-neighbor decoding for additive non-Gaussian channels,” *International Zürich Seminar on Communications (IZS)*, 2016. **(Invited)**
- [O20] Jonathan Scarlett and Volkan Cevher, “Limits on support recovery with probabilistic models: An information-theoretic framework,” *IEEE International Symposium on Information Theory (ISIT)*, 2015.
- [O19] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “The likelihood decoder: error exponents and mismatch,” *IEEE International Symposium on Information Theory (ISIT)*, 2015.
- [O18] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Refinements of the third-order term in the fixed error asymptotics of constant-composition codes,” *IEEE International Symposium on Information Theory (ISIT)*, 2015.
- [O17] Jonathan Scarlett and Vincent Tan, “Second-order asymptotics for the discrete memoryless MAC with degraded message sets,” *IEEE International Symposium on Information Theory (ISIT)*, 2015.
- [O16] Ilija Bogunovic, Volkan Cevher, Jarvis Haupt, and Jonathan Scarlett, “Active learning of self-concordant like multi-index functions,” *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2015.
- [O15] Alfonso Martinez, Jonathan Scarlett, Marco Dalai, and Albert Guillén i Fàbregas, “A complex-integration approach to the saddlepoint approximation for random-coding bounds,” *International Symposium on Wireless Communications Systems (ISWCS)*, 2014. **(Invited)**
- [O14] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Mismatched multi-letter successive decoding for the multiple-access channel,” *IEEE International Symposium on Information Theory (ISIT)*, 2014.
- [O13] Jonathan Scarlett, “On the dispersion of dirty paper coding,” *IEEE International Symposium on Information Theory (ISIT)*, 2014.
- [O12] Jonathan Scarlett and Vincent Tan, “Second-order asymptotics for the Gaussian MAC with degraded message sets,” *IEEE International Symposium on Information Theory (ISIT)*, 2014. **(Shortlisted for the student paper award)**

- [O11] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “The saddlepoint approximation: Unified random coding asymptotics for fixed and varying rates,” *IEEE International Symposium on Information Theory (ISIT)*, 2014.
- [O10] Jonathan Scarlett, “Second-order rate of constant-composition codes for the Gel’fand-Pinsker channel,” *International Zürich Seminar on Communications (IZS)*, 2014.
- [O9] Jonathan Scarlett, Li Peng, Neri Merhav, Alfonso Martinez, and Albert Guillén i Fàbregas, “Expurgated random-coding ensembles: Exponents, refinements and connections,” *International Zürich Seminar on Communications (IZS)*, 2014.
- [O8] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “A derivation of the asymptotic random-coding prefactor,” *Allerton Conference on Communication, Control, and Computing*, 2013.
- [O7] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Second-order rate region of constant-composition codes for the multiple-access channel,” *Allerton Conference on Communication, Control, and Computing*, 2013.
- [O6] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Superposition codes for mismatched decoding,” *IEEE International Symposium on Information Theory (ISIT)*, 2013.
- [O5] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “The mismatched multiple-access channel: General alphabets,” *IEEE International Symposium on Information Theory (ISIT)*, 2013.
- [O4] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Cost-constrained random coding and applications,” *Information Theory and Applications Workshop*, 2013. **(Invited)**
- [O3] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “An achievable error exponent for the mismatched multiple-access channel,” *Allerton Conference on Communication, Control, and Computing*, 2012.
- [O2] Jonathan Scarlett, Alfonso Martinez, and Albert Guillén i Fàbregas, “Ensemble-tight error exponents for mismatched decoders,” *Allerton Conference on Communication, Control, and Computing*, 2012.
- [O1] Jonathan Scarlett, Jamie Evans and Subhrakanti Dey, “How much training is needed in fading multiple access channels?,” *International Symposium on Wireless Communication Systems (ISWCS)*, 2011.