Fady Alajaji

Biography: Fady Alajaji received the B.E. degree with distinction from the American University of Beirut, Lebanon, and the M.Sc. and Ph.D. degrees from the University of Maryland, College Park, all in Electrical Engineering, in 1988, 1990 and 1994, respectively. In 1995, he joined the Department of Mathematics and Statistics at Queen's University, Kingston, Ontario, where he is currently a Professor of Mathematics and Engineering. He has served as Area Editor and as Editor for Source-Channel Coding for the IEEE Transactions on Communications. His research interests include information theory, joint source-channel coding, communication theory, network epidemics and applied probability.

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Selected Research Publications:

- S. Asoodeh, M. Diaz, F. Alajaji and T. Linder, "Estimation efficiency under privacy constraints," *IEEE Transactions on Information Theory,* to appear, 2019.
- L. Song, F. Alajaji and T. Linder, "Capacity of burst noise-erasure channels with and without feedback and input cost," *IEEE Transactions on Information Theory,* pp. 276-291, Jan. 2019.
- M. Hayhoe, F. Alajaji and B. Gharesifard, "A Polya contagion model for networks," *IEEE Transactions on Control of Network Systems,* pp. 1998-2010, Dec. 2018.
- J. Yang, F. Alajaji and G. Takahara, "Lower bounds on the probability of a finite union of events," *SIAM Journal on Discrete Mathematics,* pp. 1437-1452, July 2016.
- Y. Zhong, F. Alajaji and L. L. Campbell, "Error exponents for asymmetric two-user discrete memoryless source-channel coding systems," *IEEE Trans. Information Theory,* pp. 1497-1518, Apr. 2009.
- L. Zhong, F. Alajaji and G. Takahara, "A binary communication channel with memory based on a finite queue," *IEEE Transactions on Information Theory,* pp. 2815-2840, Aug. 2007.
- Y. Zhong, F. Alajaji and L. L. Campbell, "On the joint source-channel coding error exponent for discrete memoryless systems," *IEEE Transactions on Information Theory,* pp. 1450-1468, Apr. 2006.
- Z. Rached, F. Alajaji and L. L. Campbell, "The Kullback-Leibler divergence rate between Markov sources," *IEEE Transactions on Information Theory,* pp. 917-921, May 2004.
- F. Alajaji, P.-N. Chen and Z. Rached, "Csiszár's cutoff rates for the general hypothesis testing problem," *IEEE Transactions on Information Theory*, pp. 663-678, Apr. 2004.
- Z. Rached, F. Alajaji and L. L. Campbell, "Rényi's divergence and entropy rates for finite alphabet Markov sources," *IEEE Transactions on Information Theory*, pp. 1553-1561, May 2001.
- P.-N. Chen and F. Alajaji, "Optimistic Shannon coding theorems for arbitrary single-user systems," *IEEE Transactions on Information Theory*, pp. 2623-2629, Nov. 1999.
- F. Alajaji, "Feedback does not increase the capacity of discrete channels with additive noise," *IEEE Transactions on Information Theory*, pp. 546-549, Mar. 1995.
- F. Alajaji and T. Fuja, "A communication channel modeled on contagion," *IEEE Transactions on Information Theory*, pp. 2035-2041, Nov. 1994.

Mark A. Davenport

Biography

Mark A. Davenport is an Associate Professor with the School of Electrical and Computer Engineering, Georgia Institute of Technology. Prior to this, he spent 2010–2012 as an NSF Mathematical Sciences Postdoctoral Research Fellow in the Department of Statistics at Stanford University and as a visitor with the Laboratoire Jacques-Louis Lions at the Université Pierre et Marie Curie. He received the B.S.E.E., M.S., and Ph.D. degrees in electrical and computer engineering in 2004, 2007, and 2010, all from Rice University. His primary area of research concerns the fundamental role that low-dimensional models and optimization play in signal processing, statistical inference, and machine learning. He is a recipient of the National Science Foundation CAREER award, the Air Force Office of Scientific Research Young Investigator award, and a Sloan Research Fellowship. He currently serves as an Associate Editor for *IEEE Transactions on Signal Processing*.

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Selected publications

M. G. Moore and M. A. Davenport, "Estimation of Poisson arrival processes under linear models," to appear in *IEEE Trans. on Information Theory*, 2019.

S. Karnik, Z. Zhu, M. B. Wakin, J. Romberg, and M. A. Davenport, "The Fast Slepian Transform," to appear in *Applied and Computational Harmonic Analysis,* 2019.

H. Xu, L. Yu, M. A. Davenport, and H. Zha, "Active manifold learning via a unified framework for manifold landmarking," *IEEE Trans. on Signal Processing,* 66(21), pp. 5563-5576, November 2018.

L. Xu and M. A. Davenport, "Dynamic matrix recovery from incomplete observations under an exact low-rank constraint," in *Proc. Advances in Neural Information Processing Systems (NeurIPS)*, Barcelona, Spain, December 2016.

M. A. Davenport, A. K. Massimino, D. Needell, and T. Woolf, "Constrained adaptive sensing," *IEEE Trans. on Signal Processing*, 64(20), pp. 5437—5449, October 2016.

M. A. Davenport and J. Romberg, "An overview of low-rank matrix recovery from incomplete observations," *IEEE J. of Selected Topics in Signal Processing*, 10(4), pp. 608—622, June 2016.

M. A. Davenport, Y. Plan, E. van den Berg, and M. Wootters, "1-bit matrix completion," *Information and Inference*, 3(3), pp. 189—223, September 2014.

A. Cohen, M. A. Davenport, and D. Leviatan, "On the stability and accuracy of least squares approximations," *Foundations of Computational Mathematics,* 13(5), pp. 819—834, October 2013.

E. Arias-Castro, E. J. Candès, and M. A. Davenport, "On the fundamental limits of adaptive sensing," *IEEE Trans. on Information Theory*, 59(1), pp. 472—481, January 2013.

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R. G. Baraniuk, M. A. Davenport, R. A. DeVore, and M. B. Wakin, "A simple proof of the restricted isometry property for random matrices," *Constructive Approximation*, 28(3) pp. 253—263, December 2008.

Lara Dolecek is a Full Professor with the Electrical and Computer Engineering Department and Mathematics Department (courtesy) at the University of California, Los Angeles (UCLA). She holds a B.S. (with honors), M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences, as well as an M.A. degree in Statistics, all from the University of California, Berkeley. She received the 2007 David J. Sakrison Memorial Prize for the most outstanding doctoral research in the Department of Electrical Engineering and Computer Sciences at UC Berkeley. Prior to joining UCLA, she was a postdoctoral researcher with the Laboratory for Information and Decision Systems at the Massachusetts Institute of Technology. She received IBM Faculty Award (2014), Northrop Grumman Excellence in Teaching Award (2013), Intel Early Career Faculty Award (2013), University of California Faculty Development Award (2013), Okawa Research Grant (2013), NSF CAREER Award (2012), and Hellman Fellowship Award (2011). With her research group and collaborators, she received numerous best paper awards. Her research interests span coding and information theory, graphical models, statistical methods, and algorithms, with applications to emerging systems for data storage and computing. Prof. Dolecek has served as a consultant for a number of companies specializing in data communications and storage.

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Selected publications:

Hareedy, C. Lanka, N. Guo, and L. Dolecek, "A Combinatorial Methodology for Optimizing Non-Binary Graph-Based Codes: Theoretical Analysis and Applications in Data Storage," IEEE Trans. Information Theory, to appear.

F. Sala, R. Gabrys, C. Schoeny, and L. Dolecek, "Exact Reconstruction from Insertions in Synchronization Codes," IEEE Trans. Information Theory, 2017, vol. 63 (4), pp. 2428 -- 2445, Apr. 2017.

L. Dolecek and Y. Cassuto, "Channel Coding for Nonvolatile Memory Technologies: Theoretical Advances and Practical Considerations," Proceedings of the IEEE, vol. 105 (9), pp. 1705 -- 1724, Sept. 2017.

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L. Dolecek, Z. Zhang, V. Anantharam, M. Wainwright, and B. Nikolic, "Analysis of Absorbing Sets and Fully Absorbing Sets for Array-Based LDPC Codes," IEEE Trans. Information Theory, vol. 56 (1), pp. 181 -- 201, Jan. 2010.

Serge Fehr

Biography: Serge Fehr received his mathematics M.Sc. degree in 1998 from the Swiss Federal Institute of Technology (ETH), and his Ph.D. in 2003 from the Computer Science Department, University of Aarhus (Denmark). After a postdoc year at Macquarie University in Sydney (Australia), he joined the Cryptology Group at CWI, the Dutch Center for Mathematics and Computer Science in Amsterdam. Currently, he holds the position of a senior researcher at CWI and is a professor of mathematics at Leiden University. His research interest lies in the mathematical aspects of cryptography and its connections to classical and quantum information theory. He currently serves as Associate Editor for the IACR Journal of Cryptology.

Web site: `https://www.cwi.nl/~fehr`

Selected publications:

1. S. Fehr, L. Salvail. "Quantum Authentication and Encryption with Key Recycling." In *Advances in Cryptology - EUROCRYPT 2017*, vol. 10212 of *Lecture Notes in Computer Science*, pp. 311-338 (2017).
2. S. Fehr, M. Fillinger. "On the Composition of Two-Prover Commitments, and Applications to Multi-Round Relativistic Commitments." In *Advances in Cryptology - EUROCRYPT 2016*, vol. 9666 of *Lecture Notes in Computer Science*, pp. 477-496 (2016).
3. R. Cramer, I. Damgård, N. Döttling, S. Fehr, G. Spini. "Linear Secret Sharing Schemes from Error Correcting Codes and Universal Hash Functions." In *Advances in Cryptology - EUROCRYPT 2015*, vol. 9057 of *Lecture Notes in Computer Science*, pp. 313-363 (2015).
4. S. Fehr, S. Berens. "On the Conditional Rényi Entropy." In *IEEE Transactions on Information Theory*, vol. 60(11), pp. 6801-6810 (2014).
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7. E. Ben-Sasson, S. Fehr, R. Ostrovsky. "Near-Linear Unconditionally-Secure Multiparty Computation with a Dishonest Minority." In *Advances in Cryptology - CRYPTO 2012*, vol. 7417 of *Lecture Notes in Computer Science*, pp. 663-680 (2012).
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Biography : Elisabeth Gassiat received the diploma of Ecole Poytechnique Palaiseau, in 1983, then a Master of Probability and Statistics in Orsay, Paris-Sud University in 1984. She then defended her PHD in 1988. After being professor in Evry University till 1993, she is now professor at the University Paris-Sud, Orsay. She is currently head of the Laboratory of Mathematics of Orsay and of the Department of Mathematics of Orsay. Her research interests are in mathematical statistics and interactions with information theory and signal processing. Some key words are: order identification, latent variable models, adaptive coding, high dimensional statistics, semiparametric statistics.

Web site : https://www.math.u-psud.fr/~gassiat/

Selected publications :

E. Gassiat Universal coding and order identification by model selection methods, Springer Monographs in Mathematics, Springer, 2018.

N. Verzelen, E. Gassiat, Adaptive estimation of high-dimensional signal to noise ratios, Bernoulli, 24 (4B), 3683-3710, 2018.

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S. Boucheron, E. Gassiat A Bernstein von Mises Theorem for discrete probability distributions. Electronic Journal of Statistics, 3, 114-148, 2009.

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S. Boucheron, E. Gassiat, Optimal error exponents in hidden Markov models order estimation, IEEE Transactions Info. Th., vol 48, 4, 964-980, 2003.

D. Dacunha-Castelle, E. Gassiat, Testing the order of a model using locally conic parametrization: population mixtures and stationary ARMA processes, Annals of Statistics, 27, 4, 1178-1209, 1999.

I. Csiszar, F. Gamboa, E. Gassiat, M.E.M. pixel correlated solutions for generalized moment and interpolation problems, IEEE Trans. Inf. Theory, 45, 2253-2271, 1999.

Sudhir R. Ghorpade

Biography: Sudhir Ghorpade received his B.Sc., M.Sc. and Ph.D. degrees in Mathematics from the University of Bombay, Indian Institute of Technology (IIT) Bombay, and Purdue University, West Lafayette in 1982, 1984, and 1989 respectively. Since December 1989, he has been on the faculty of the IIT Bombay, where he is currently an Institute Chair Professor. He has held short-term visiting positions at the Institut de Mathmatiques de Luminy, Marseille, France, Tata Institute of Fundamental Research, Mumbai, India, Universit de la Mediterranne, Aix-Marseille, France, Christian-Alberchts-Universitt zu Kiel, Germany, Purdue University, West Lafayette, USA, University of Tennessee, Knoxville, USA, Technical University of Denmark, Kgs. Lyngby, Denmark, and Université de Toulouse Le Mirail, Toulouse, France. His research interests include algebraic geometry (especially, over finite fields) and coding theory. He is a Fellow of the National Academy of Sciences, India since October 2010 and has served on the editorial board of *Resonance* (2003-2011) and the *International Journal of Information and Coding Theory* (2007-2013). Currently, he is on the editorial board of the *Indian Journal of Pure and Applied Mathematics*, and also the President of the Indian Mathematical Society for the period April 2018–March 2019.

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Selected Publications:

1. S. R. Ghorpade and G. Lachaud, "Hyperplane sections of Grassmannians and the number of MDS linear codes", *Finite Fields and their Applications*, Vol. 7, No. 4 (2001), pp. 468–506.
2. S. R. Ghorpade and G. Lachaud, "Étale cohomology, Lefschetz theorems and number of points of singular varieties over finite fields", Dedicated to Yuri I. Manin on the occasion of his 65th birthday, *Moscow Mathematical Journal* Vol. 2, No. 3 (2002), pp. 589–631.
3. S. R. Ghorpade and M. A. Tsfasman, "Schubert varieties, linear codes and enumerative combinatorics", *Finite Fields and their Applications*, Vol. 11, No. 4 (2005), pp. 684–699.
4. P. Beelen, S. R. Ghorpade and T. Høholdt, "Affine Grassmann codes", *IEEE Transactions on Information Theory*, Vol. 56, No. 7 (2010), pp. 3166–3176.
5. P. Beelen, S. R. Ghorpade and T. Høholdt, "Duals of affine Grassmann codes and their relatives", *IEEE Transactions on Information Theory*, Vol. 58, No. 6 (2012), pp. 3843–3855.
6. S. R. Ghorpade and K. V. Kaipa, "Automorphism groups of Grassmann codes", *Finite Fields and their Applications*, Vol. 23 (2013), pp. 80-102.
7. M. Datta and S. R. Ghorpade, "On a conjecture of Tsfasman and an inequality of Serre for the number of points of hypersurfaces over finite fields, Dedicated to M. Tsfasman and S. Vlăduţ on their 60^{th} birthdays, *Moscow Mathematical Journal*, Vol. 15, No. 4 (2015), pp. 715–725.
8. M. Datta and S. R. Ghorpade,"Number of solutions of systems of homogeneous polynomial equations over finite fields", *Proceedings of the American Mathematical Society*, Vol. 145, No. 2 (2017), pp. 525–541.
9. S. R. Ghorpade and P. Singh, "Minimum distance and the minimum weight codewords of Schubert codes", *Finite Fields and Their Applications*, Vol. 49 (2018), pp. 1–28.
10. P. Beelen, M. Datta and S. R. Ghorpade, "Maximum number of common zeros of homogeneous polynomials over finite fields", *Proceedings of the American Mathematical Society*, Vol. 148, No . 4 (2018), pp. 1451–1468.

Oliver Johnson

Biography: Oliver Johnson received the B.A. degree in 1995, Part III Mathematics in 1996, and the Ph.D. degree in 2000, all from the University of Cambridge, Cambridge, U.K. He was Clayton Research Fellow at Christs College and Max Newman Research Fellow at Cambridge University until 2006. Since 2006, he has been at University of Bristol, Bristol, U.K, where he is Professor of Information Theory. He is Director of the MSc in the Mathematics of Cybersecurity, and Director of Equality, Diversity and Inclusion for Bristol Mathematics. His research interests include information-theoretic analyses of probabilistic limit theorems, functional inequalities, group testing, and communications.

Google Scholar: `https://scholar.google.co.uk/citations?user=qt_FPGQAAAAJ`

Selected publications

[1] O. T. Johnson and A. R. Barron. Fisher information inequalities and the Central Limit Theorem. *Probability Theory and Related Fields*, 129(3):391–409, 2004.

[2] O. T. Johnson. *Information theory and the Central Limit Theorem.* Imperial College Press, London, 2004.

[3] I. Kontoyiannis, P. Harremoës, and O. T. Johnson. Entropy and the law of small numbers. *IEEE Trans. Inform. Theory*, 51(2):466–472, 2005.

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[11] O. T. Johnson. Entropy and thinning of discrete random variables. In E. Carlen, M. Madiman, and E. Werner ed., *Convexity and Concentration*, pp. 33–53. Springer, 2017.

[12] S. Brown, O. T. Johnson, and A. Tassi. Performance framework for sparse Random Linear Network Coding in broadcast networks. *IEEE Trans. Vehicular Technology*, 67(5):4677–4682, 2018.

[13] R. Venkataramanan and O. T. Johnson. A strong converse bound for multiple hypothesis testing, with applications to high-dimensional estimation. *Electronic Journal of Statistics*, 12(1):1126–1149, 2018.

[14] M. P. Aldridge, O. T. Johnson, and J. M. Scarlett. Group testing: an information theory perspective. *Foundations and Trends in Information Theory*, 2019.

Shachar Lovett

Biography: Shachar Lovett received a B.Sc degree in Mathematics, Physics and Computer Science, as well as an M.Sc in Computer Science, from the Hebrew University at Jerusalem in 2000. He received a PhD from the Weizmann Institute of Science in 2010. He is an Associate Professor in the Computer Science and Engineering department at the University of California, San Diego, from 2012. His research interests are broadly in theoretical computer science and mathematics, and more specifically in computational complexity, coding theory, algebraic constructions, randomness and pseudo-randomness, additive combinatorics and high-dimensional geometry. Shachar is an Associate Editor in the ACM Transactions on Computation Theory and is on the Computational Complexity Foundation board.

Website: http://cseweb.ucsd.edu/~slovett

Selected publications:

1. Shachar Lovett. **MDS matrices over small fields: A proof of the GM-MDS conjecture**. *The 57th Annual IEEE Symposium on Foundations of Computer Science* (FOCS 2018).
2. Daniel Kane, Shachar Lovett, Shay Moran. **Near-optimal linear decision trees for k-SUM and related problems**. Accepted to the *Journal of the ACM (JACM)*. Preliminary version appeared in *the 50th ACM Symposium on Theory of Computing* (STOC 2018).
3. Nikhil Bansal, Daniel Dadush, Shashwat Garg, Shachar Lovett. **The Gram-Schmidt Walk - A Cure for the Banaszczyk Blues**. *The 50th ACM Symposium on Theory of Computing* (STOC 2018).
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5. Benny Applebaum, Shachar Lovett. **Algebraic Attacks against Random Local Functions and Their Countermeasures**. *SIAM Journal on Computing, 47:1, 52-79, 2018. Preliminary version appeared in the 48th ACM Symposium on Theory of Computing* (STOC 2016).
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9. Divesh Aggarwal, Yevgeniy Dodis, Shachar Lovett. **Non-malleable Codes from Additive Combinatorics**. *SIAM Journal on Computing, 47(2), 524-546, 2018. Preliminary version appeared in the 46th ACM Symposium on Theory of Computing* (STOC 2014).
10. Zeev Dvir, Janos Kollar, Shachar Lovett. **Variety evasive sets**. *Computational Complexity, 1-21, 2012.*

Chandra R. Murthy

Biography: C. R. Murthy (S'03--M'06--SM'11) received the B. Tech. degree in Electrical Engineering from the Indian Institute of Technology, Madras in 1998, the M. S. and Ph. D. degrees in Electrical & Computer Engineering from Purdue University and the University of California, San Diego, in 2000 and 2006, respectively. He has worked at Qualcomm Inc. (2000-02) and Beceem Communications (2006-07). In Sept. 2007, he joined the Department of Electrical Communication Engineering at the Indian Institute of Science, Bangalore, India, where he is currently working as a Professor.

His research interests are in the areas of energy harvesting communications, multiuser MIMO systems, and sparse signal recovery techniques applied to wireless communications. He is a recipient of the Young Faculty Research Fellowship from the Ministry of Electronics and Information Technology, Govt. of India. His paper won the best paper award at NCC 2014, and a paper co-authored by him won the student best paper award at ICASSP 2018. He was an AE for the IEEE Signal Processing Letters during 2012-16, and the Sadhana Journal during 2016-18. He was an elected member of the IEEE SPCOM Technical Committee for the years 2014-16; and has been re-elected for the years 2017-19. He is a past Chair of the IEEE Signal Processing Society, Bangalore Chapter. Currently, he is serving as an associate editor for the IEEE Transactions on Signal Processing and the IEEE Transactions on Communications.

Google scholar (15 Jan. 2019): citations: 1430, h-index: 18, i-10 index: 37.

Website: http://ece.iisc.ac.in/~cmurthy

Selected Publications:

1. M. Sharma, C. R. Murthy, and R. Vaze, "Asymptotically Optimal Uncoordinated Power Control Policies for Energy Harvesting Multiple Access Channels with Decoding Costs," Accepted, *IEEE Transactions on Communications*, Oct. 2018
2. R. Chopra, C. R. Murthy, and G. Rangarajan, "Statistical Tests for Detecting Granger Causality," *IEEE Transactions on Signal Processing*, vol. 66, no. 22, Nov. 15, 2018
3. S. Khanna and C. R. Murthy, "On the Restricted Isometry of the Columnwise Khatri-Rao Product," *IEEE Transactions on Signal Processing*, vol. 61, no. 5, pp. 1170-1183, Mar. 1, 2018.
4. A. Sharma and C. R. Murthy, "Computationally Tractable Algorithms for Finding a Subset of Non-defective Items from a Large Population," ***IEEE Transactions on Information Theory,*** vol. 63, no. 11, pp. 7149 - 7165, Nov. 2017.
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7. Lekshmi Ramesh and Chandra R. Murthy, "Sparse support recovery via covariance estimation," *Proc. ICASSP,* Apr. 2018. **[ICASSP 2018 student best paper award!]**
8. P. Mohapatra and C. R. Murthy, "Capacity of the Deterministic Z-Interference Channel with Unidirectional Transmitter Cooperation and Secrecy Constraints," ***Proc. IEEE International Symposium on Information Theory (ISIT),*** Hong Kong, P.R.C., Jun. 2015.
9. A. Sharma and C. R. Murthy, "On Finding a Set of Healthy Individuals from a Large Population," ***Information Theory and Applications Workshop***, San Diego, CA, USA, Feb. 2013.
10. P. Mohapatra and C. R. Murthy, "Generalized Degrees of Freedom of the K-User Symmetric MIMO Interference Channel," ***Proc. IEEE International Symposium on Information Theory (ISIT)***, St. Petersburg, Russia, Aug. 2011.
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Selected Publications:

1. ``Rank-sparsity incoherence for matrix decomposition" V Chandrasekaran, S Sanghavi, PA Parrilo, AS Willsky, in *SIAM Journal on Optimization* 21 (2), 572-596

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9. "Dropping convexity for faster semi-definite optimization," S Bhojanapalli, A Kyrillidis, S Sanghavi, in *Conference on Learning Theory*, 530-582

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Selected Publications:

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1. S. Shneer, A. L. Stolyar, "Stability Conditions for a Discrete-Time Decentralised Medium Access Algorithm," *Annals of Applied Probability*, Vol. 28, no. 6, pp. 3600 – 3628, 2018.
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