

Emmanuel Abbe

Biography: Emmanuel Abbe received his Ph.D. degree from the Department of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology in 2008, and his M.S. degree from the Department of Mathematics at the Ecole Polytechnique Fédérale de Lausanne in 2003. He joined Princeton University as an assistant professor in 2012 and became associate professor in 2016, jointly in the Program for Applied and Computational Mathematics and the Department of Electrical Engineering. He is also an Associate Faculty in the Department of Mathematics at Princeton University since 2016. He is the recipient of the Foundation Latsis International Prize, the Bell Labs Prize, the NSF CAREER Award, the Google Faculty Research Award and the Walter Curtis Johnson Prize. His research interests are in information theory and machine learning.

Selected Publications:

1. E. Abbe. Community detection and stochastic block models: recent developments. *Special Issue of the Journal of Machine Learning Research*, 2017.
2. E. Abbe and C. Sandon. Proof of the achievability conjectures in the general stochastic block model. *To appear in the Communications in Pure and Applied Mathematics*, 2017.
3. E. Abbe, N. Alon, A.S. Bandeira, and C. Sandon. Linear boolean classification, coding and “the critical problem”. *Information Theory, IEEE Transactions on*, PP(99):1–1, 2016.
4. E. Abbe, A.S. Bandeira, and G. Hall. Exact recovery in the stochastic block model. *Information Theory, IEEE Transactions on*, 62(1):471–487, Jan 2016.
5. E. Abbe. Randomness and dependencies extraction via polarization, with applications to Slepian-Wolf coding and secrecy. *Information Theory, IEEE Transactions on*, 61(5):2388–2398, May 2015.
6. E. Abbe and C. Sandon. Community detection in general stochastic block models: Fundamental limits and efficient algorithms for recovery. In *IEEE 56th Annual Symposium on Foundations of Computer Science (FOCS), 2015, Berkeley, USA, October, 2015*, pages 670–688, 2015.
7. E. Abbe and C. Sandon. Recovering communities in the general stochastic block model without knowing the parameters. In C. Cortes, N.D. Lawrence, D.D. Lee, M. Sugiyama, R. Garnett, and R. Garnett, editors, *Advances in Neural Information Processing Systems (NIPS) 28*, pages 676–684. Curran Associates, Inc., 2015.
8. E. Abbe, A. Shpilka, and A. Wigderson. Reed-muller codes for random erasures and errors. In *Proceedings of the Forty-Seventh Annual ACM on Symposium on Theory of Computing (STOC)*, pages 297–306, New York, NY, USA, 2015. ACM.
9. E. Abbe and A. Montanari. On the concentration of the number of solutions of random satisfiability formulas. *Random Structures and Algorithms*, 45(3):362382, 2014.
10. E. Abbe and I.E. Telatar. Polar codes for the m -user multiple access channel. *Information Theory, IEEE Transactions on*, 58(8):5437–5448, 2012.

Jean-Francois Chamberland

Biography: Jean-Francois Chamberland completed a Bachelor of Engineering degree at McGill University in 1998, and a Master of Science degree at Cornell University in 2000. He received a Doctor of Philosophy degree from the University of Illinois at Urbana-Champaign in Electrical Engineering in 2004. He is an Associate Professor in the Department of Electrical and Computer Engineering at Texas A&M University. His research interests are in the areas of communication and information theory, decision and control, computer systems and networks, statistical inference, learning, and biological systems. His contributions to distributed detection have been recognized through an IEEE Young Author Best Paper Award from the IEEE Signal Processing Society. He was the recipient of a Faculty Early Career Development (CAREER) Award from the National Science Foundation.

Web site: <http://www.ece.tamu.edu/~chmbrlnd/>

Selected Publications:

1. F. Hamidi-Sepehr, J.-F. Chamberland, and H. D. Pfister. On the performance of block codes over finite-state channels in the rare-transition regime. *IEEE Transactions on Communications*, 63(11):3974–3990, November 2015.
2. S. Kumar, J.-F. Chamberland, and H. D. Pfister. First-passage time and large-deviation analysis for erasure channels with memory. *IEEE Transactions on Information Theory*, 59(9):5547–5565, September 2013.
3. P. Parag, J.-F. Chamberland, H. D. Pfister, and K. R. Narayanan. Code-rate selection, queueing behavior and the correlated erasure channel. *IEEE Transactions on Information Theory*, 59(1):397–407, January 2013.
4. P. Parag, S. Sah, S. Shakkottai, and J.-F. Chamberland. Value-aware resource allocation for service guarantees in networks. *IEEE Journal on Selected Areas in Communications*, 29(5):960–968, May 2011.
5. P. Parag and J.-F. Chamberland. Queueing analysis of a butterfly network for comparing network coding to classical routing. *IEEE Transactions on Information Theory*, 56(4):1890–1889, April 2010.
6. L. Liu, J.-F. Chamberland, and S. L. Miller. User cooperation in the absence of phase information at the transmitters. *IEEE Transactions on Information Theory*, 54(3):1197–1206, March 2008.
7. L. Liu, P. Parag, and J.-F. Chamberland. Quality of service analysis for wireless user-cooperation networks. *IEEE Transactions on Information Theory*, 53(10):3833–3842, October 2007.
8. L. Liu, P. Parag, J. Tang, W.-Y. Chen, and J.-F. Chamberland. Resource allocation and quality of service evaluation for wireless communication systems using fluid models. *IEEE Transactions on Information Theory*, 53(5):1767–1777, May 2007.
9. J.-F. Chamberland and V. V. Veeravalli. How dense should a sensor network be for detection with correlated observations? *IEEE Transactions on Information Theory*, 52(11):5099–5106, November 2006.
10. J.-F. Chamberland and V. V. Veeravalli. Decentralized detection in sensor networks. *IEEE Transactions on Signal Processing*, 51(2):407–416, February 2003.

Parikshit Gopalan

Biography Parikshit Gopalan earned a Bachelor of Technology in Computer Science and Engineering from IIT Bombay in 2000, and a Ph.D in Algorithms, Combinatorics and Optimization from the Georgia Institute of Technology in 2006, followed by postdoctoral positions at the University of Texas at Austin and the University of Washington. He joined Microsoft in 2008 as a Researcher in the MSR Silicon Valley Lab. From 2015 onwards, he was a Senior Researcher in the MSR Redmond Lab. In 2016 he joined VMware Research as a Senior Staff Researcher. His research interests are in theoretical computer science and coding theory, focusing on algorithms, computational complexity, machine learning and coding for distributed storage. His work has won awards including the 2014 IEEE Communication Society & Information Theory Society Joint Paper Prize.

Representative Publications

- Parikshit Gopalan, Noam Nisan, Rocco A. Servedio, Kunal Talwar and Avi Wigderson. Smooth Boolean functions are easy: efficient algorithms for low-sensitivity functions. *7th Innovations in Theoretical Computer Science conference 2016 (ITCS16)*.
- Boaz Barak, Parikshit Gopalan, Johan Hastad, Raghu Meka, Prasad Raghavendra and David Steurer. Making the Long code shorter. *SIAM Journal of Computing 44(5), 2015 (special issue for FOCS2012)*.
- Parikshit Gopalan, Cheng Huang, Bob Jenkins and Sergey Yekhanin. Explicit Maximally Recoverable Codes With Locality. *IEEE Transactions on Information Theory 60(9), 2014*.
- Parikshit Gopalan. A Fourier-Analytic Approach to Reed-Muller Decoding. *IEEE Transactions on Information Theory 59(11), 2013*.
- Parikshit Gopalan, Raghu Meka, Omer Reingold and David Zuckerman. Pseudorandom Generators for Combinatorial Shapes. *SIAM Journal of Computing 42(3), 2013*.
- Parikshit Gopalan, Huseyin Simitci, Cheng Haung, Sergey Yekhanin. On the Locality of Codeword Symbols. *IEEE Transactions on Information Theory 58(11), 2012. 2014 IEEE Communication Society & Information Theory Society Joint Paper Prize*.
- Parikshit Gopalan, Venkatesan Guruswami and Prasad Raghavendra. List decoding Tensor products and Interleaved codes. *SIAM Journal of Computing (SICOMP) 40(5), 2011*.
- Parikshit Gopalan, Subhash Khot and Rishi Saket. Hardness of Reconstructing Multivariate Polynomials over Finite Fields. *SIAM Journal of Computing (SICOMP) 39(6), 2010 (special issue for FOCS2007)*.
- Vitaly Feldman, Parikshit Gopalan, Subhash Khot and Ashok K. Ponnuswami. On Agnostically Learning Parities, Monomials and Halfspaces. *SIAM Journal of Computing (SICOMP) 39(2), 2009 (special issue for FOCS2006)*.
- Parikshit Gopalan, Adam R. Klivans and David Zuckerman. List-Decoding Reed-Muller codes over small fields. *40 th ACM Symposium on Theory of Computing 2008 (STOC2008)*.

Philipp Grohs

Biography: Philipp Grohs received a Master's degree in Mathematics from the Technical University of Vienna in 2006 and a doctoral degree in Applied Mathematics from the Technical University of Vienna in 2007. He is an Associate Professor of Mathematics at the University of Vienna. His research interests are in Signal Processing, Numerical Analysis, Computational Harmonic Analysis, Machine Learning and Computational Geometry. He is the recipient of the 2014 ETH Latsis Prize.

Web site: <http://mat.univie.ac.at/~grohs>

Selected Publications:

1. R. Alaifari and P. Grohs. 'Phase Retrieval in the General Setting of Continuous Banach Frames'. *SIAM Journal on Mathematical Analysis*, in press, (2017).
2. R. Alaifari, I. Daubechies, P. Grohs and G. Thakur. 'Reconstructing Real-Valued Functions from Unsigned Coefficients with Respect to Wavelet and Other Frames'. *Journal of Fourier Analysis and Applications*, in press, (2017).
3. T. Wiatowski, M. Tschannen, A. Stanic, P. Grohs and H. Bölcskei. 'Discrete Deep Feature Extraction: A Theory and New Architectures'. *Proceedings of the International Conference on Machine Learning (ICML), New York, USA*, pp. 2149 – 2158, (2016).
4. P. Grohs and A. Obermeier. 'Optimal Adaptive Ridgelet Schemes for Linear Advection Equations'. *Applied and Computational Harmonic Analysis*, vol. 41, no. 3, pp. 768-814, (2016).
5. P. Grohs, H. Hardering and O. Sander. 'Optimal A Priori Discretization Error Estimates for Geodesic Finite Elements'. *Journal on Foundations of Computational Mathematics*, vol. 15, no. 6, pp. 1357-1411, (2016).
6. P. Grohs and M. Sprecher. 'Total Variation Regularization on Riemannian Manifolds by Iteratively Reweighted Minimization'. *Information and Inference: A Journal of the IMA*, vol. 5, no. 4, pp. 353 – 378, (2016).
7. P. Grohs. 'Wolfowitz's Theorem and Consensus Algorithms in Hadamard Spaces'. *Proceedings of the American Mathematical Society*, vol. 143, pp. 4403-4414, (2015).
8. P. Grohs and G. Kutyniok. 'Parabolic Molecules'. *Journal on Foundations of Computational Mathematics*, vol. 14, no. 2, pp. 299 – 337, (2014).
9. P. Grohs. 'A general Proximity Analysis of Nonlinear Subdivision Schemes'. *SIAM Journal on Mathematical Analysis*, vol. 42, no. 2, pp. 729-750, (2010).
10. P. Grohs. 'Stability of Manifold-Valued Subdivision Schemes and Multiscale Transformations'. *Constructive Approximation*, vol. 32, no. 3, pp. 569 – 596, (2010).

Ioannis Kontoyiannis

Biography: Ioannis Kontoyiannis was born in Greece in 1972. He received the B.Sc. degree in mathematics in 1992 from Imperial College (University of London), and in 1993 he obtained a distinction in Part III of the Cambridge University Pure Mathematics Tripos. In 1997 he received the M.S. degree in statistics, and in 1998 the Ph.D. degree in electrical engineering, both from Stanford University. During 1998-2001 he was with the Department of Statistics at Purdue University, and during 2000-2005 he was with the Division of Applied Mathematics and with the Department of Computer Science at Brown University. Since March 2005 he has been with the Department of Informatics of the Athens University of Economics and Business, where he currently is a Professor. In 2002 he was awarded the Manning endowed assistant professorship; in 2004 he was awarded the prestigious Sloan Foundation Research Fellowship; in 2005 he was awarded an honorary Master of Arts Degree *Ad Eundem* by Brown University; in 2009 he was awarded a Marie Curie Fellowship. He has served two terms as an Associate Editor for the *IEEE Transactions on Information Theory* (in Shannon Theory, and At Large). He is an IEEE Fellow.

Web page: <http://pages.cs.aueb.gr/users/yiannisk/>

Selected publications

1. I. Kontoyiannis and M. Skoularidou. "Estimating the directed information and testing for causality." *IEEE Transactions on Information Theory*, **62**, no. 11, pp. 6053–6067, November 2016.
2. I. Kontoyiannis and S. Verdú. "Optimal lossless data compression: Non-asymptotics and asymptotics." *IEEE Transactions on Information Theory*, **60**, no. 2, pp. 777–795, February 2014.
3. P. Dellaportas and I. Kontoyiannis. "Control variates for estimation based on reversible Markov chain Monte Carlo samplers." *Journal of the Royal Statistical Society: Series B*, **74**, Issue 1, pp. 133-161, January 2012.
4. A.D. Barbour, O. Johnson, I. Kontoyiannis and M. Madiman. "Compound Poisson approximation via information functionals." *Electronic Journal of Probability*, **15**, paper 42, pp. 1344–1369, August 2010.
5. Y. Gao, I. Kontoyiannis and E. Bienenstock. "Estimating the entropy of binary time series: Methodology, some theory and a simulation study." *Entropy*, **10**, issue 2, pp. 71–99, June 2008.
6. I. Kontoyiannis, P. Harremoës and O. Johnson. "Entropy and the law of small numbers," *IEEE Transactions on Information Theory*, **51**, pp. 466–472, February 2005.
7. A. Dembo and I. Kontoyiannis. "Source coding, large deviations, and approximate pattern matching." Invited paper in the special issue of the *IEEE Transactions on Information Theory on Shannon Theory*, dedicated to A.D. Wyner, **48**, pp. 1590–1615, June 2002.
8. A. Antos and I. Kontoyiannis. "Convergence properties of functional estimates for discrete distributions," *Random Structures & Algorithms*, **9**, pp. 163–193, October 2001, special issue in honor of D.E. Knuth's 64th birthday.

9. I. Kontoyiannis. "Pointwise redundancy in lossy data compression and universal lossy data compression," *IEEE Transactions on Information Theory*, **46**, pp. 136–152, January 2000.
10. I. Kontoyiannis, P.H. Algoet, Yu.M. Suhov and A.J. Wyner. "Nonparametric entropy estimation for stationary processes and random fields, with applications to English text," *IEEE Transactions on Information Theory*, **44**, pp. 1319–1327, May 1998.

Gitta Kutyniok

Biography: Gitta Kutyniok completed her Diploma in Mathematics and Computer Science in 1996 at the Universität Paderborn in Germany. She received her Ph.D. degree in the area of time-frequency analysis from the same university in 2000. She completed her Habilitation in Mathematics in 2006 and received her *venia legendi*. From 2001 to 2008 she held visiting appointments at several US institutions, including Princeton University, Stanford University, Yale University, Georgia Institute of Technology, and Washington University in St. Louis. After returning to Germany in October 2008, she became a full professor of mathematics at the Universität Osnabrück, and headed the Applied Analysis Group. Since October 2011, she has an Einstein Chair at the Technische Universität Berlin and is head of the Applied Functional Analysis Group (AFG). In the Fall Term 2014, she had a visiting professorship at the ETH Zürich.

Her research and teaching have been recognized by various awards, including a Heisenberg Fellowship and the von Kaven Prize by the German Research Foundation, awards by the Universität Paderborn and the Justus-Liebig Universität Gießen for Excellence in Research, as well as the Weierstrass Prize for Outstanding Teaching. She also delivered the Noether-Lecture at the 2013 Annual Meeting of the Mathematical Societies from Germany and Austria and the Hans Schneider ILAS Lecturer at IWOTA 2016 in St. Louis. Last year, she was honored with a membership in the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW).

Gitta Kutyniok is the founding Scientific Director of the “Berlin International Graduate School in Model- and Simulation based Research” (BIMoS), the chair of the GAMM activity group on “Mathematical Signal- and Image Processing”, and the main coordinator of the priority programm on “Compressed Sensing in Information Theory” of the German Research Foundation. In addition, she is a board member of the Berlin Mathematical School, a board member of the Einstein Center for Mathematics Berlin (ECMath), and a member of the council of the MATHEON “Mathematics for key technologies” in Berlin. She is also an Associate Editor as well as Corresponding Editor for several journals in the area of applied mathematics as well as of the IEEE signal processing letters.

Webpage: www.math.tu-berlin.de/~kutyniok

Selected Publications (Please note that in mathematics, the authors are always ordered alphabetically!):

1. B. Adcock, A. C. Hansen, G. Kutyniok, and J. Ma. Linear stable sampling rate: Optimality of 2D wavelet reconstructions from Fourier measurements. *SIAM J. Math. Anal.* **47** (2015), 1196–1233.
2. P. Boufounos, G. Kutyniok, and H. Rauhut. Sparse recovery from combined fusion frame measurements. *IEEE Trans. Inform. Theory* **57** (2011), 3864–3876.
3. P. G. Casazza, G. Kutyniok, and S. Li. Fusion frames and distributed processing. *Appl. Comput. Harmon. Anal.* **25** (2008), 114–132.
4. D. Donoho and G. Kutyniok. Microlocal analysis of the geometric separation problem. *Comm. Pure Appl. Math.* **66** (2013), 1–47.
5. P. Grohs and G. Kutyniok. Parabolic molecules. *Found. Comput. Math.* **14** (2014), 299–337.
6. P. Kittipoom, G. Kutyniok, and W.-Q. Lim. Construction of compactly supported shearlet frames. *Constr. Approx.* **35** (2012), 21–72.
7. G. Kutyniok. Clustered sparsity and separation of cartoon and texture. *SIAM J. Imaging Sci.* **6** (2013), 848–874.
8. G. Kutyniok. Geometric separation by single-pass alternating thresholding. *Appl. Comput. Harmon. Anal.* **36** (2014), 23–50.
9. G. Kutyniok and D. Labate. Resolution of the wavefront set using continuous shearlets. *Trans. Amer. Math. Soc.* **361** (2009), 2719–2754.
10. G. Kutyniok, K. A. Okoudjou, F. Philipp, and E. K. Tuley. Scalable frames. *Linear Algebra Appl.* **438** (2013), 2225–2238.

Michael Lentmaier

Biography: Michael Lentmaier received the Dipl.-Ing. degree in Electrical Engineering from University of Ulm, Germany in 1998, and the Ph.D. degree in Telecommunication Theory from Lund University, Sweden in 2003. From 2005 to 2007 he was with the Institute of Communications and Navigation of the German Aerospace Center (DLR) in Oberpfaffenhofen, where he worked on signal processing techniques in satellite navigation receivers. From 2008 to 2012 he was a senior researcher and lecturer at the Vodafone Chair Mobile Communications Systems at TU Dresden, where he was heading the Algorithms and Coding research group. Since January 2013 he is an Associate Professor at the Department of Electrical and Information Technology at Lund University. His research interests include design and analysis of coding systems, graph based iterative algorithms and Bayesian methods applied to decoding, detection and estimation in communication systems. He is a senior member of the IEEE and served as an editor for IEEE Communications Letters from 2010 to 2013 and IEEE Transactions on Communications since 2014. He was awarded the Communications Society & Information Theory Society Joint Paper Award (2012) for his paper "Iterative Decoding Threshold Analysis for LDPC Convolutional Codes".

Selected Publications

1. Mitchell, D. G. M., Lentmaier, M., Pusane, A. E., Costello, Jr., D. J., "Randomly Punctured LDPC Codes" *IEEE Journal on Selected Areas in Communications*, vol. 34, no. 2, pp. 408–421, Feb. 2016.
2. Mitchell, D. G. M., Lentmaier, M., Costello, Jr., D. J., "Spatially Coupled LDPC Codes Constructed From Protographs", *IEEE Trans. on Inform. Theory*, vol. 61, no. 9, pp. 4866–4889, Sept. 2015.
3. Lentmaier, M., Sridharan, A., Costello, Jr., D. J., Zigangirov, K. Sh., "Iterative Decoding Threshold Analysis for LDPC Convolutional Codes" *IEEE Trans. on Inform. Theory*, vol. 56, no. 10, pp. 5274–5289, Oct. 2010.
4. Zhang, W., Lentmaier, M., Zigangirov, K. Sh., Costello, Jr., D. J., "Braided Convolutional Codes. A New Class of Turbo-Like Codes", *IEEE Trans. on Inform. Theory*, vol. 56, no. 1, pp. 316–331, Jan. 2010.
5. Jiménez Feltström, A., Truhachev, D., Lentmaier, M., Zigangirov, K. Sh., "Braided Block Codes", *IEEE Trans. on Inform. Theory*, vol. 55, no. 6, pp. 2640–2658, June 2009.
6. Pusane, A. E., Jiménez Feltström, A., Sridharan, A., Lentmaier, M., Zigangirov, K. Sh., Costello, D. J.: "Implementation Aspects of LDPC Convolutional Codes", *IEEE Trans. on Communications*, vol. 56, no. 7, pp. 1060–1069, July 2008.
7. Lentmaier, M., Truhachev, D. V., Zigangirov, K. Sh., and Costello, Jr., D. J., "An Analysis of the Block Error probability Performance of Iterative Decoding", *IEEE Trans. on Inform. Theory*, vol. 51, no. 11, pp. 3834–3855, Nov. 2005.
8. Lentmaier, M., Truhachev, D. V., K. Zigangirov, K. Sh., "Analytic Expressions for the Bit Error Probabilities of Rate-1/2 Memory 2 Convolutional Encoders", *IEEE Transactions on Information Theory*, vol. 50, no. 6, pp. 1303–1311, June 2004.
9. Lentmaier, M., Truhachev, D. V., and Zigangirov, K. Sh., "To the Theory of Low-Density Convolutional Codes II", *Problems of Information Transmission*, vol. 37, no. 4, pp. 288–306, Oct. 2001.
10. Lentmaier, M. and Zigangirov, K. Sh., "On Generalized Low-Density Parity-Check Codes based on Hamming Component Codes", *IEEE Comm. Letters*, vol. 3, no. 8, pp. 248–250, Aug. 1999.

Biography and Selected Publications

Biography

Neri Merhav (S'86–M'87–SM'93–F'99) was born in Haifa, Israel, on March 16, 1957. He received the B.Sc., M.Sc., and D.Sc. degrees from the Technion, Israel Institute of Technology, in 1982, 1985, and 1988, respectively, all in electrical engineering.

From 1988 to 1990 he was with AT&T Bell Laboratories, Murray Hill, NJ, USA. Since 1990 he has been with the Electrical Engineering Department of the Technion, where he is now the Irving Shepard Professor. During 1994–2000 he was also serving as a consultant to the Hewlett–Packard Laboratories – Israel (HPL-I). His research interests include information theory, statistical communications, and statistical signal processing. He is especially interested in the areas of lossless/lossy source coding and prediction/filtering, relationships between information theory and statistics, detection, estimation, as well as in the area of Shannon Theory, including topics in joint source–channel coding, source/channel simulation, and coding with side information with applications to information hiding and watermarking systems. Another recent research interest concerns the relationships between Information Theory and statistical physics.

Dr. Merhav was a co-recipient of the 1993 Paper Award of the IEEE Information Theory Society and he is a Fellow of the IEEE since 1999. He also received the 1994 American Technion Society Award for Academic Excellence and the 2002 Technion Henry Taub Prize for Excellence in Research. From 1996 until 1999 he served as an Associate Editor for Source Coding to the IEEE TRANSACTIONS ON INFORMATION THEORY. He also served as a co-chairman of the Program Committee of the 2001 IEEE International Symposium on Information Theory. He is currently on the Editorial Board of FOUNDATIONS AND TRENDS IN COMMUNICATIONS AND INFORMATION THEORY.

Selected Publications

1. M. Feder, N. Merhav, and M. Gutman, “Universal prediction of individual sequences,” *IEEE Trans. Inform. Theory*, vol. 38, no. 4, pp. 1258–1270, July 1992.
2. J. Ziv and N. Merhav, “A measure of relative entropy between individual sequences with application to universal classification,” *IEEE Trans. Inform. Theory*, vol. 39, no. 4, pp. 1270–1279, July 1993.
3. N. Merhav, G. Kaplan, A. Lapidoth, and S. Shamai (Shitz), “On information rates for mismatched decoders,” *IEEE Trans. Inform. Theory*, vol. 40, no. 6, pp. 1953–1967, November 1994.
4. N. Merhav and M. Feder, “A strong version of the redundancy–capacity theorem of universal coding,” *IEEE Trans. Inform. Theory*, vol. 41, no. 3, pp. 714–722, May 1995.
5. E. Arikan and N. Merhav, “Guessing subject to distortion,” *IEEE Trans. Inform. Theory*, vol. 44, no. 3, pp. 1041–1056, May 1998.
6. M. Feder and N. Merhav, “Universal composite hypothesis testing: a competitive minimax approach,” (invited paper) *IEEE Trans. Inform.*

- Theory*, special issue in memory of Aaron D. Wyner, vol. 48, no. 6, pp. 1504–1517, June 2002.
7. N. Merhav, “Statistical physics and information theory,” (invited paper) *Foundations and Trends in Communications and Information Theory*, vol. 6, nos. 1–2, pp. 1–212, 2009.
 8. N. Merhav, “Physics of the Shannon limits,” *IEEE Trans. Inform. Theory*, vol. 56, no. 9, pp. 4274–4285, September 2010.
 9. N. Merhav, “Data processing theorems and the second law of thermodynamics,” *IEEE Trans. Inform. Theory*, vol. 57, no. 8, pp. 4926–4939, August 2011.
 10. N. Merhav, “On optimum parameter modulation–estimation from a large deviations perspective,” *IEEE Trans. Inform. Theory*, vol. 58, no. 12, pp. 7215–7225, December 2012.
 11. N. Merhav, “Statistical physics of random binning,” *IEEE Trans. Inform. Theory*, vol. 61, no. 5, pp. 2454–2464, May 2015.
 12. M. Bastani Parizi, E. Telatar and N. Merhav, “Exact random coding secrecy exponents for the wiretap channel,” *IEEE Trans. Inform. Theory*, vol. 63, no. 1, pp. 509–531, January 2017.

Website

<http://webee.technion.ac.il/people/merhav/>

Klaus-Robert Müller

Bio: Klaus-Robert Müller studied physics until 1989 and received the Ph.D. degree in computer science in 1992 at University of Karlsruhe. He was a research fellow at the University of Tokyo in 1994/95. In 1995, he founded the Intelligent Data Analysis group at GMD-FIRST and directed it until 2008. From 1999 to 2006, he was a Professor at the University of Potsdam. Afterwards he became a Professor of computer science at TU Berlin and at the same time director of the Bernstein Focus on Neurotechnology Berlin until 2014. From 2014 he has served as co-director of the Big Data Center in Berlin. Since 2012, he also holds a distinguished professorship at Korea University, Seoul. Dr. Müller was awarded amongst others the SEL Alcatel Communication Award in 2006 and in 2014 the Berlin Science Award granted by Berlin's governing Mayor. In 2012, he was elected to be a member of the German National Academy of Sciences-Leopoldina. His current research interests include machine learning and data analysis with applications in the sciences (e.g. Neuroscience, Physics, Chemistry and Medicine) as well as in industry.

Website: https://www.ml.tu-berlin.de/menue/members/klaus-robert_mueller/

Selected Publications

1. Schütt, K.T., Arbabzadah, F., Chmiela, S., Müller, K.R. and Tkatchenko, A., Quantum-chemical insights from deep tensor neural networks. *Nature Communications*, 8, 13890 (2017)
2. Fazli, S., Dähne, S., Samek, W., Bießmann, F. and Müller, K.R., Learning from more than one data source: data fusion techniques for sensorimotor rhythm-based brain-computer interfaces. *Proceedings of the IEEE*, 103(6), pp.891-906 (2015)
3. Bach, S., Binder, A., Montavon, G., Klauschen, F., Müller, K.R. and Samek, W., On pixel-wise explanations for non-linear classifier decisions by layer-wise relevance propagation. *PloS one*, 10(7), p.e0130140 (2015)
4. Rupp, M., Tkatchenko, A., Müller, K.R. and Von Lilienfeld, O.A., Fast and accurate modeling of molecular atomization energies with machine learning. *Physical review letters*, 108(5), p.058301 (2012)
5. LeCun, Y.A., Bottou, L., Orr, G.B. and Müller, K.R., Efficient backprop. In *Neural networks: Tricks of the trade* (pp. 9-48). Springer Berlin Heidelberg. (2012)
6. Blankertz, B., Tomioka, R., Lemm, S., Kawanabe, M. and Müller, K.R., Optimizing spatial filters for robust EEG single-trial analysis. *IEEE Signal processing magazine*, 25(1), pp.41-56 (2008)
7. Braun, M.L., Buhmann, J.M. and Müller, K.R., On relevant dimensions in kernel feature spaces. *Journal of Machine Learning Research*, 9(Aug), pp.1875-1908 (2008)
8. Rätsch, G., Onoda, T. and Müller, K.R., Soft margins for AdaBoost. *Machine learning*, 42(3), pp.287-320 (2001)
9. Müller, K.R., Mika, S., Rätsch, G., Tsuda, K., Schölkopf, B., An introduction to kernel-based learning algorithms, *IEEE Transactions on Neural Networks* 12 (2), 181 - 201 (2001)
10. Schölkopf, B., Smola, A. and Müller, K.R., Nonlinear component analysis as a kernel eigenvalue problem. *Neural computation*, 10(5), pp.1299-1319 (1998)

Rei Safavi-Naini

Biography: Security, Privacy and Information Assurance, and Professor of Computer Science at the University of Calgary. Before joining the University in 2007, she was the Director of Telecommunication and Information Technology Research Institute (now ICT Research Institute) at the University of Wollongong, Australia. She has authored or co-authored over 350 articles in refereed journals and conferences, and served as an Associate Editor of IEEE Transaction on Information Theory and ACM Transaction on Information and System Security (TISSEC). She is currently an Associate Editor of IEEE Transaction on Secure and Dependable Computing, IET Information Security and Journal of Mathematical Cryptology. She has been Program Chair/co-Chair of a number of conferences and workshops including, ACM CCSW 2014, Financial Cryptography 2014, ACNS 2013 and Crypto 2012 and is the founding member of the Steering Committee of International Conference in Information Theoretic Security (ICITS). She has a BEng, and MEng from University of Tehran, and PhD from University of Waterloo. Her current research interest includes cryptography, communication and network security, cloud security, and privacy enhancing technologies.

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Selected Publications:

- 1 P. Wang, R. Safavi-Naini, "Interactive Message Transmission over Adversarial Wiretap Channel II", INFOCOM 2017.
- 2 P. Wang, R. Safavi-Naini, "A Model for Adversarial Wiretap Channels." IEEE Transactions on Information Theory, Vol. 62, No. 2, pp 970-983, Feb. 2016.
- 3 L. F. Zhang, R. Safavi-Naini, "Batch Verifiable Computation of Polynomials on Outsourced Data." ESORICS 2015, LNCS 9327, pp. 167-185, November 2015.
- 4 R. Safavi-Naini, P. Wang, "Codes for Limited View Adversarial Channels." In Proceedings of the IEEE International Symposium on Information Theory (ISIT 2013), IEEE Press, pp. 266-270, 2013.
- 5 L. F. Zhang, R. Safavi-Naini, "Batch Verifiable Computation of Outsourced Functions." Design, Codes, Cryptography, Springer, invited paper, dedicated to Scott Vanstone, Vol. 77, No. 2, pp. 563-585, December 2015
- 6 H. Shi, S. Jiang, R. Safavi-Naini and M.A. Tuhin, "Optimal Secure Message Transmission by Public Discussion." IEEE Transactions on Information Theory, Vol. 57, No. 1, pp. 572-585, January 2011.
- 7 M. Gagne, K. Narayan and R. Safavi-Naini, "Privacy Preserving EHR System using Attribute-based Infrastructure." In Proceedings of the 2010 ACM Workshop on Cloud Computing Security Workshop (ACM CCSW '10), Chicago, USA, October 4-8, 2010. ACM, pp. 47-52, 2010.
- 8 S. F. Shahandashti and R. Safavi-Naini, "Threshold Attribute-Based Signatures and Their Application to Anonymous Credential System." In Progress in Cryptology - AFRICACRYPT 2009, Lecture Notes in Computer Science, Vol. 5580, pp. 198-216, 2009.
- 9 R. Safavi-Naini and P. Wild, "Information Theoretic Bounds on Authentication Systems in Query Model." IEEE Transactions on Information Theory, Special issue of Information Theoretic Security, Vol. 54, No. 6, pp. 2426-2436, June 2008.
- 10 F. Zhang, R. Safavi-Naini and W. Susilo, "An Efficient Signature Scheme from Bilinear Pairings and Its Application." In Public Key Cryptography (PKC 2004), Springer, Lecture Notes in Computer Science, Vol. 2947, pp 277- 290, 2004.
- 11 R. Safavi-Naini, H. Wang and C. Xing, "Linear Authentication Codes: Bounds and Constructions." Transactions on Information Theory, Vol. 49, No. 4, pp. 866-872, 2003.
- 12 R. Safavi-Naini and H. Wang, "Broadcast authentication for group communication." Theoretical Computer Science, Vol. 269, pp. 1-21, 2001.

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Selected Publications

References

- [1] A. Wachter-Zeh, M. Stinner, and V. Sidorenko, "Convolutional codes in rank metric with application to random network coding," *IEEE Transactions on Information Theory*, vol. 61, pp. 3199–3213, June 2015.
- [2] V. Sidorenko and M. Bossert, "Fast skew-feedback shift-register synthesis," *Designs, Codes and Cryptography*, vol. 70, no. 1-2, pp. 55–67, 2014.
- [3] A. Chaaban, V. Sidorenko, and C. Senger, "On multi-trial forney-kovalev decoding of concatenated codes," *Advances in Mathematics of Communications*, vol. 8, no. 1, pp. 1–20, 2014.
- [4] W. Li, V. Sidorenko, and D. Silva, "On transform-domain error and erasure correction by Gabidulin codes," *Designs, Codes and Cryptography*, vol. 73, no. 2, pp. 571–586, 2014.
- [5] J. H. Weber, V. R. Sidorenko, C. Senger, and K. A. S. Abdel-Ghaffar, "Asymptotic Single-Trial Strategies for GMD Decoding with Arbitrary Error-Erasure Tradeoff," *Problems of Information Transmission*, vol. 48, pp. pp. 324–333, October 2012.
- [6] V. R. Sidorenko, G. Richter, and M. Bossert, "Linearized shift-register synthesis," *Information Theory, IEEE Transactions on*, vol. 57, pp. 6025–6032, Sept. 2011.

- [7] V. R. Sidorenko, L. Jiang, and M. Bossert, “Skew-Feedback Shift-Register Synthesis and Decoding Interleaved Gabidulin Codes,” *IEEE Transactions on Information Theory*, vol. 57, pp. 621–632, February 2011.
- [8] V. R. Sidorenko and G. Schmidt, “A linear algebraic approach to multi-sequence shift-register synthesis,” *Problems of Information Transmission*, vol. 47, pp. 149–165, 2011. 10.1134/S0032946011020062.
- [9] G. Schmidt, V. R. Sidorenko, and M. Bossert, “Syndrome decoding of reed–solomon codes beyond half the minimum distance based on shift-register synthesis,” *IEEE Transactions on Information Theory*, vol. 56, pp. 5245–5252, October 2010.
- [10] V. R. Sidorenko, C. Senger, M. Bossert, and V. V. Zyablov, “Single-Trial Decoding of Concatenated Codes using Fixed or Adaptive Erasing,” *Advances in Mathematics of Communications*, vol. 4, no. 1, pp. 49–60, 2010.

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Selected Publications:

1. V. A. Vaishampayan and A. Campello, "Reliability of Erasure Coded Storage Systems: A Combinatorial-Geometric Approach," IEEE Transactions on Information Theory, vol. 61, no. 11, pp. 5795-5809, Nov. 2015.
2. C. Tian, B. Sasidharan, V. Aggarwal, V. A. Vaishampayan, P. Vijay Kumar, "Layered Exact-Repair Regenerating Codes via Embedded Error Correction and Block Designs," IEEE Transactions on Information Theory, vol. 61, No. 4, pp. 1933-1947, April 2015.
3. C. Torezzan, S. Costa and V. A. Vaishampayan, "Constructive Spherical Codes on Layers of Flat Tori," IEEE Trans. on Information Theory, vol. 55, No. 10, pp. 6655-6663, 2013.
4. N. J. A. Sloane, V. A. Vaishampayan and S. I. R. Costa, "A note on Projecting the Cubic Lattice", Discrete and Computational Geometry, vol. 46, No. 3, pp. 472-478, 2011.
5. N. J. A. Sloane and V. A. Vaishampayan, "Generalizations of Schobi's Tetrahedral Dissection," Discrete and Computational Geometry, March 2009.
6. C. Tian, V. A. Vaishampayan, N. J. A. Sloane, "Constant Weight Codes: An Approach Based on Dissections," IEEE Transactions on Information Theory, March 2009.
7. V. A. Vaishampayan and M. D. Feuer, "An Overlay Architecture for Managing Lightpaths in Optically Routed Networks," IEEE Transactions on Communications, vol. 53, No. 10, pp. 1729-1737, Oct. 2005.
8. V. A. Vaishampayan and S. I. R. Costa, "Curves on a Sphere, Shift Map Dynamics and Error Control for Continuous Alphabet Sources," IEEE Transactions on Information Theory, vol. 49, No. 7, pp. 1658-1672, July 2003.
9. N. J. A. Sloane and V. A. Vaishampayan, "A Zador-like Formula for Quantizers Based on Periodic Tilings," IEEE Transactions on Information Theory, vol. 48, No. 12, pp. 3138-3140, Dec. 2002.
10. V. A. Vaishampayan, N. J. A. Sloane and S. D. Servetto, "Multiple Description Vector Quantization with Lattice Codebooks: Design and Analysis," IEEE Transactions on Information Theory, vol. 47, No. 5, pp. 1718-1735, July 2001.
11. V. Vaishampayan, "Design of Multiple Description Scalar Quantizers," IEEE Transactions on Information Theory, vol. 39, pp. 821-834, May 1993.