

Lara Dolecek, PhD

CONTACT INFORMATION

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ACADEMIC EMPLOYMENT

University of California, Los Angeles, Los Angeles, California, USA

Associate Professor, Department of Electrical Engineering, 2015 - present.
Assistant Professor, Department of Electrical Engineering, 2009 - 2015.

- Research, graduate, and undergraduate teaching and mentoring in coding theory, with applications to modern data storage and information processing systems.
- Founder and Director of Laboratory for Robust Information Systems (LORIS).
Website: <http://www.loris.ee.ucla.edu>
- Co-Founder and Co-Director (with Prof. Rick Wesel) of UCLA Center on Development of Emerging Storage Systems (CoDESS). Website: <http://www.uclacodess.org>

Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

Postdoctoral Research Associate, Department of Electrical Engineering and Computer Sciences, 2007 - 2009.

- Statistical inference and fast sampling methods for complex networks; Advisor: Devavrat Shah

EDUCATION

University of California, Berkeley, Berkeley, California, USA

PhD, Electrical Engineering and Computer Sciences, Dec. 2007

- **2007 David J. Sakrison Memorial Prize for the most outstanding doctoral research in the Department of Electrical Engineering and Computer Sciences, University of California, Berkeley.**
- Dissertation Title: “Rethinking the Minimum Distance: Channels With Varying Sampling Rate and Iterative Decoding of LDPC Codes”
- Major: Coding and Communications Theory; Advisor: Venkat Anantharam

University of California, Berkeley, Berkeley, California, USA

M.A., Statistics, May 2007

- Thesis title: “Applications of importance sampling methods to evaluation of the low frame error rate performance of LDPC codes”; Advisor: Martin J. Wainwright

University of California, Berkeley, Berkeley, California, USA

M.S., Electrical Engineering and Computer Sciences, May 2004

- Thesis title: “Runlength properties of a Reed-Muller (1,m) code with applications in channels with synchronization errors”; Advisor: Venkat Anantharam

University of California, Berkeley, Berkeley, California, USA

B.S. with honors, Electrical Engineering and Computer Sciences, Dec. 1999

HONORS AND
AWARDS

- **IEEE Data Storage Society 2016 Best Student Paper Award** for ref. J13.
- **Best of Selse Award, March 2016** – received two awards for two separate papers refs. C10 and C11.
- **Best Paper Award, IEEE Globecom Conference, 2015** for ref. C13.
- **IBM Faculty Award, 2014.**
- **Northrop Grumman Excellence in Teaching Award, 2013, UCLA School of Engineering** (award given annually to a professor in the school with over 160 faculty members)
- **Intel Early Career Faculty Award, 2013, one of 15 world-wide recipients for innovative and exploratory research (out of 100+ applicants).**
- Faculty Development Award, University of California, 2013.
- **Okawa Foundation Research Grant, 2013, one of six nation-wide recipients for innovative research in Information Technologies.**
- **NSF CAREER Award, 2012.**
- Hellman Fellow, a campus wide program established to support promising assistant professors, University of California, Los Angeles, 2011.
- **David J. Sakrison Memorial Prize for the most outstanding dissertation in Electrical Engineering and Computer Sciences, University of California, Berkeley, 2007.**
- Dissertation Year Fellowship, University of California, Berkeley, 2006-2007.
- GAANN Graduate Fellowship, University of California, Berkeley, 2004-2005.
- Mentored Research Award, University of California, Berkeley, 2003-2004.
- Eugene Cota-Robles Fellowship, University of California, Berkeley, 2000-2003.
- Marian Wojciech Para Memorial Prize, University of California, Berkeley, 1999.
- Member of HKN, TBP and Golden Key Honor societies,
- Senior member of *IEEE* since 2012.

PROFESSIONAL
ACTIVITIES

- Editorship
 - Associate Editor for Coding Theory for *IEEE Transactions on Communications*, 2013 – present.
 - Associate Editor for Coding Theory and Sequences for *IEEE Communications Letters*, 2012 – 2015.
 - Lead guest editor for *IEEE JSAC Special Issue on Communication Methodologies for the Next-Generation Storage Systems*, 2013 – 2014.
- Conference Chairing
 - Chair of Data Storage Symposium at *IEEE Globecom*, Austin, TX, Dec. 2014.
 - Co-chair of Data Storage and Applications Symposium at *IEEE ICNC*, San Diego, CA, Jan. 2013.
- Technical Program Committee Membership
 - *IEEE Globecom*, 2017.
 - *IEEE International Conference on Communications (ICC)*, 2017.
 - *IEEE International Symposium on Information Theory (ISIT)*, 2016.
 - *IEEE International Symposium on Turbo Coding (ISTC)*, 2016.
 - *IEEE International Conference on Communications (ICC)*, 2016.

- *IEEE International Symposium on Information Theory (ISIT)*, 2015.
- *IEEE Information Theory Workshop (ITW)*, 2015.
- *IEEE Globecom*, 2015.
- *IEEE International Conference on Communications (ICC)*, 2015.
- *IEEE International Symposium on Information Theory (ISIT)*, 2014.
- *IEEE International Symposium on Turbo Coding (ISTC)*, 2014.
- *IEEE Information Theory Workshop (ITW)*, 2014.
- *IEEE Globecom*, 2014.
- *IEEE International Conference on Communications (ICC)*, 2014.
- *IEEE Information Theory Workshop (ITW)*, 2013.
- *IEEE Globecom*, 2013.
- *IEEE International Conference on Communications (ICC)*, 2013.
- *Non-volatile Memories Workshop (NVMW)*, 2013.
- *IEEE International Symposium on Turbo Coding (ISTC)*, 2012.
- *IEEE International Conference on Communications (ICC)*, 2012.
- *IEEE Globecom*, 2012.
- *IEEE International Conference on Communications and Networking (ICNC)*, 2012.
- *Non-volatile Memories Workshop (NVMW)*, 2012.
- *IEEE Globecom*, 2011.
- *IEEE International Conference on Communications (ICC)*, 2011.
- *IEEE International Symposium on Computers and Communications (ISCC)*, 2011.
- Member of *IEEE Information Theory Society Committee on New Directions*
- Member of *IEEE Standards Working Group for developing standards that specify the advanced error correction coding for non-volatile memories*
- Selected Tutorial Presentations
 - “Modern Coding Theory And Connections to Error-Efficient Computing,” SNF Workshop on Theory and Practice of Error-Efficient Computing Systems, Mar. 2017, EPFL, Switzerland.
 - “Making Error Correcting Codes Work for Flash Memory,” a 3-hr tutorial at *Flash Memory Summit*, Santa Clara, CA, Aug. 2014, co-presented with Dr. Steve Hetzler and Prof. Anxiao Jiang.
 - “Channel Coding Methods for Emerging Data Storage and Memory Systems: Opportunities to Innovate Beyond the Hamming Metric,” a 3-hr tutorial, *IEEE International Symposium on Information Theory (ISIT)*, Jun. 2014, co-presented with Prof. Anxiao Jiang.
 - “Coding Methodologies for Emerging Data Storage Systems: Opportunities and Challenges,” a 3-hr tutorial presented at the *27th Annual Symposium on Communications*, Kingston, Canada, Jun. 2014.
 - “Making Error Correcting Codes Work for Flash Memory,” a 3-hr tutorial at *Flash Memory Summit*, Santa Clara, CA, Aug. 2013, co-presented with Mr. Charles Camp and Prof. Anxiao Jiang.
 - “Coding Methods for Emerging Storage Systems,” a 3-hr tutorial at *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2012, co-presented with Prof. Anxiao Jiang.

- “High-Performance Graph-Based Codes,” a 3-hr tutorial at *IEEE AUSCTW 2011*, Melbourne, Australia, Jan. 2011.
- Session Organizer
 - *IEEE Information Theory Workshop*, 2017, session title: “Coding for memories,”; *IEEE Asilomar 2017*, session title: “DNA storage”; *IEEE Asilomar 2015*, session title: “Coding and Signal Processing for Modern Memories” ; *IEEE Information Theory and Applications Workshop*, 2014, session title: “Variability-Aware Information Processing”; *IEEE Information Theory and Applications Workshop 2013*; session title “Fault-Tolerant Information Processing”; *IEEE Allerton 2013*, session title “Coding for Deletion Channels”; *IEEE Asilomar 2012*, session title: “Coding-Theoretic Methods for the Next-Generation Storage Systems”; *IEEE Allerton 2011*, session title “Information Theory for Circuits”.
- University Coordinator and Student Outreach Organizer, *Flash Memory Summit*, 2013, 2014, 2016, and 2017.
- Reviewer for *IEEE Transactions on Information Theory*, *IEEE Transactions on Communications*, *IEEE Transactions on Circuits and Systems*, *Eurasip Journal on Signal Processing*, *IEEE Journal on Special Topics in Communications*, *IEEE Journal on Special Topics in Signal Processing*, *Codes, Designs and Cryptography* and numerous *IEEE* conferences.
- Panelist for National Science Foundation (NSF), US-Israel Binational Research Foundation, Qatar National Research Foundation (QNRF)

UNIVERSITY
SERVICE

- Co-organizer of Undergraduate Visit Day, EE Department, UCLA, 2017.
- Member of the Non-Tenure Evaluation Committee, EE Department, UCLA, 2016-present.
- EE Department Representative to UCLA Legislative Assembly, 2014-2015.
- Chair of the EE Department Annual Research Review, 2012.
- Co-Chair of the EE Department Annual Research Review, 2011.
- Organizer of the EE Department Seminar Series, Fall 2010.
- Member of the Graduate Admissions Committee, EE Department, UCLA, 2010-2011.
- Speaker at various workshops and townhalls for EE students (Tips on Getting into Graduate Schools, Post-B.S. Career Choices, etc.), EE Department, UCLA, 2011-present.

CURRICULUM
DEVELOPMENT

- Introduction and complete development of “ECE M146: Introduction to Machine Learning,” EE Department/Computer Engineering Track, UCLA, 2017-2018.
- Introduction and complete development of “EE 235A: Mathematical Foundations of Data Storage Systems,” EE Department, UCLA, 2014-present.
- Introduction and complete development of “EE 239A: Special topics: Statistical Inference and Monte Carlo Methods,” EE Department, UCLA, 2011-present.
- Introduction and complete development of “ENG 116: Statistics for Management Decisions,” (co-taught with Prof. C. Barz) Engineering Masters Online (MSOL) Program, UCLA, 2016.
- Other classes taught at UCLA: “EE103: Applied Numerical Computing”, “EE131A: Probability”, “EE132A: Introduction to Communication Systems” (all high enrollment sophomore/junior classes); “EE205A: Matrix Analysis for Engineers,” “EE231A: Information and Coding Theory”.

SELECTED INVITED
TALKS AND
SEMINARS
(TUTORIALS LISTED
EARLIER)

- L. Dolecek, “New Trends in Coding Theory & Opportunities in Modern Memories and Computing,” Electrical Engineering Systems Seminar, Caltech, May 2017.
- L. Dolecek, “Coding theoretic techniques for modern memories,” American Mathematical Society Annual Meeting, **Plenary Talk**, Atlanta, GA, Dec. 2016. AMS ¹
- L. Dolecek, “Coding theoretic methods for robust and approximate computing,” Information Theory and Applications Workshop, UCSD, Feb. 2017.
- L. Dolecek, “Flash Memories in High Radiation Environments: LDPC Decoder Study,” Asilomar Conference on Signals, Systems, and Computers, Nov. 2016.
- L. Dolecek, “Coding Theory for Robust Computing: Models, Tools, Applications,” **Plenary Talk**, *IEEE International Symposium on Turbo Coding (ISTC)*, Brest, France, Sept. 2016.
- L. Dolecek, “Coding Theory for Modern Computing,” Texas A& M University, Communications Seminar, April 2016.
- L. Dolecek, “ECC-based Iterative Computing Under Uncertainty: Theory and Applications,” Information Theory and Applications Workshop, UCSD, Feb. 2016.
- L. Dolecek, “New Problems in Coding Theory with Applications to Modern Data Storage and Memories,” Simons Institute, UC Berkeley, Feb. 2015.
- L. Dolecek, “Synchronizing Files Under a Large Number of Edits: Theory and Practice,” Information Theory and Applications Workshop, UCSD, Feb. 2015.
- L. Dolecek, “Mathematical Foundations of the Next-Generation Robust and Resource-Efficient Information Systems: Algorithms and Code Designs,” UIUC ISL Seminar, Nov. 2014.
- L. Dolecek, “Mathematical Foundations of the Next-Generation Robust and Resource-Efficient Information Systems: Algorithms and Code Designs,” UCSD Communications Theory and Systems Seminar, Nov. 2014.
- L. Dolecek, N. Bitouze, F. Sala, and S. M. S. Tabatabaei Yazdi, “A Practical Framework for Efficient File Synchronization,” Allerton Conference on Communication, Control, and Computing, Oct. 2013.
- L. Dolecek, “Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric,” Stanford ISL Colloquium, Jun. 2013.
- L. Dolecek, “Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric,” Rutgers University, Jun. 2013.
- L. Dolecek, “Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric,” University of Southern California, The Communications, Networks and Systems seminar, May 2013.
- L. Dolecek, “Exploiting Variability in Flash Memories Through Non-binary Error Correction Coding,” DATE Workshop on Software Approaches to Resilient System Design, Mar. 2013.
- L. Dolecek, C. Huang, and S. M. S. Tabatabaei Yazdi, “Analysis of iterative decoders under processing errors,” Information Theory and Applications Workshop, UCSD, Feb. 2013.
- S. Tabatabaei Yazdi and L. Dolecek, “Synchronization from Deletions Through Interactive Communication,” Information Theory and Applications Workshop, UCSD, Feb. 2013.
- L. Dolecek, C. Huang, and S. M. S. Tabatabaei Yazdi, “Analysis of Iterative Decoders Under Processing Errors,” Allerton Conference on Communication, Control, and Computing, Oct. 2012.
- L. Dolecek, “Coding-Theoretic Strategies for the Emerging storage Systems,” Princeton University, Feb. 2012.

¹delivered via proxy due to a sudden family death.

- S. M. S. Tabatabaei Yazdi and L. Dolecek, “LDPC Decoders on Unreliable Hardware: Fundamental Limits and Practical Implications,” Information Theory and Applications Workshop, UCSD, Feb. 2012.
- L. Dolecek, R. Gabrys, E. Yaakobi, L. Grupp, and S. Swanson, “Flexible Coding Strategies for Next-Generation Storage Systems,” Information Theory and Applications Workshop, UCSD, Feb. 2012.
- L. Dolecek, “Flexible Coding Schemes With Applications to Emerging Memory Technologies,” American Mathematical Society (AMS) Annual Meeting, Jan. 2012.
- L. Dolecek, R. Gabrys, E. Yaakobi, L. Grupp, and S. Swanson, “Tackling Temporal Variability in Multilevel Flash: New Error-Control Code Design and Architectural Validation,” Allerton Conference on Communication, Control, and Computing, Oct. 2011.
- L. Dolecek, “Flexible Coding Schemes With Applications to Emerging Memory Technologies,” Aspects of Coding Theory Workshop, EPFL, Jun. 2011.
- L. Dolecek, “Coding Methods for Emerging Non-Volatile Memories,” Information Theory and Applications Workshop, UCSD, Feb. 2011.
- L. Dolecek, “Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits,” JPL-NASA, May 2010.
- L. Dolecek, “Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits,” Cornell University, Apr. 2010.
- L. Dolecek, “Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits,” University of Southern California, The Communications, Networks and Systems seminar, Apr. 2010.
- L. Dolecek, “On Absorbing Sets of Structured Sparse Graph codes,” Information Theory and Applications Workshop, UCSD, Feb. 2010.

INDUSTRIAL
EXPERIENCE

Consultant for a distributed data storage start-up, 2016-present

- Provided expert advice on channel codes for new storage applications.

Consultant for an SBIR start-up, 2015-2016

- Provided expert advice on LDPC codes for new memories.

Consultant for Cadence, 2012

- Provided expert advice on LDPC codes for new memories.

Consultant for a Bay Area Startup, Santa Clara, CA, 2009

- Provided expert advice and tutorial sessions on the implementation of Reed-Solomon and LDPC decoders for high-throughput optical links.

Research and Development Engineer, Agilent Technologies, Santa Rosa, CA, 2000

- Developed platform independent detection and decoding algorithms and implemented them in C++ and Matlab for various testing instruments used in communications systems.

FUNDING SUPPORT

- Qualcomm Inc. through Qualcomm Innovation Fellowship for my PhD student Clayton Schoeny, 2016-2017.
- UC Mexus Collaborative Research Program. Grant title: Channel Coding and Signal Processing for Resilient, Ultra-Dense Memories, 2016-2017. PI: L. Dolecek
- National Science Foundation (NSF), CCF-CIF program. Grant title: “Synchronization and Deduplication of Distributed Coded Data: Fundamental Limits and Algorithms,” 2015-2018. UCLA PI: L. Dolecek.
- Advanced Storage Technologies Consortium (ASTC), research grant for research on advanced coding methods for magnetic recording applications, 2015-present. PI: L. Dolecek.
- JPL-NASA: Research and Technology Development Fund. Grant title: Breaking the Limitations of Radiation-Hardened Devices, 2014-present. UCLA PI: L. Dolecek.
- Grant from Micron Technologies to support research in CODESS Center, 2014-present. PIs: L. Dolecek and R. Wesel.
- Intel Early Career Faculty Honor Program, funding for research on modern data storage and data processing system design, 2013-present. PI: L. Dolecek.
- Okawa Research Grant, funding for research on advanced coding methods for modern data storage systems, 2013-2014. PI: L. Dolecek.
- National Science Foundation (NSF): CAREER program. Grant title: “Channel Coding Paradigms for Next Generation Storage Systems,” 2012-2017. PI: L. Dolecek.
- The Intelligence Advanced Research Project Activity (IARPA). Grant title: “Reliable Inference with Missing, Masked, Malfunctioning, or Malicious Sensors (RIM4S),” 2012-2013. PI: L. Dolecek, co-PIs: D. Cabric, M. Srivastava, and G. Pottie.
- National Science Foundation (NSF): CCF-CIF program. Grant title: “Collaborative Research: Spatially Coupled Sparse Codes on Graphs - Theory, Practice, and Extensions,” 2012-2015. L. Dolecek is UCLA PI, other PIs: D. Costello, T. Fuja, J. Kliewer, and R. Smarandache.
- National Science Foundation (NSF): CCF-CIF program. Grant title: “Collaborative Research: Code Design and Analysis to Approach Capacity with Short Blocklengths Using Feedback,” 2012-2015. PI: R. Wesel, co-PIs: B. Daneshrad and D. Divsalar, and L. Dolecek.
- National Science Foundation (NSF): Expeditions in Computing program. Grant title: Collaborative Research: Variability-Aware Software for Efficient Computing with Nanoscale Devices, 2012-2015. PI: M. Srivastava, co-PIs: L. Dolecek and P. Gupta.
- IBM, gift funding for research on reliable data storage, 2014-present. PI: L. Dolecek.
- Intel Corporation, gift funding for research on reliable data storage, 2012-present. PI: L. Dolecek.
- Advanced Storage Technologies Consortium (ASTC), gift funding and research grant for research on non-binary LDPC codes for data storage systems, 2011-2014. PI: L. Dolecek, co-PI: R. Wesel.
- UC Faculty Development Award, funding for research on advanced coding methods for modern data storage systems, 2013-2014. PI: L. Dolecek.
- UC Discovery Program. Grant title: “Codes with provable guarantees for storage applications,” 2011-2013. PI: L. Dolecek.
- Western Digital Corporation. Grant title: “Codes with provable guarantees for storage applications,” 2011-2013. PI: L. Dolecek.
- Hellman Fellows Program, funding for research on coding methods for reliable data storage, 2011-2012. PI: L. Dolecek.

- UC Mexus Collaborative Research Program. Grant title: “Channel Codes for Emerging Highly Reliable Systems: Efficient Algorithms and Performance Guarantees,” 2012-2014. PI: L. Dolecek

MENTORSHIP

Current Post-Doctoral Researchers

- Dr. Fred Sala (co-advised with Prof. Guy Van den Broeck, CS Dept., UCLA)

Current Graduate Students

- Zehui Chen (PhD), EE Department, UCLA, 2016-present.
- Ahmed Hareedy (PhD), EE Department, UCLA, 2014-present.
- Homa Esfahanizadeh (PhD), EE Department, UCLA, 2015-present.
- Shahroze Kabir (MS), EE Department, UCLA, 2016-present.
- Clayton Schoeny (PhD), EE Department, UCLA, 2013-present.
- Lev Tauz (PhD), EE Department, UCLA, starting Fall 2017.
- Ruiyi Wu (MS), EE Department, UCLA, starting Fall 2017.
- Prisca Yang (PhD), EE Department, UCLA, 2016-present.

Current Undergraduate Students

- Andrew Tan, EE Department, UCLA, 2017-present.
- Ruiyi Wu, EE Department, UCLA, 2016-present.

Past Post-Doctoral Researchers

- Nicolas Bitouze, (PhD, ENST, France, 2013), EE Department, UCLA, 2012-2014.
- Yao Li (PhD, Rutgers University, 2012), EE Department, UCLA, 2012-2014, now Senior Engineer at Akamai.
- Seyed M. Sadegh Tabatabaei Yazdi (PhD, Texas AM, 2011), EE Department, UCLA, 2011-2012, now Senior Engineer at Marvell.

Graduated PhD Students

- Frederic Sala, EE Department, UCLA, PhD 2016. Dissertation title: “Algorithms and Coding Techniques for Reliable Data Management and Storage”. Next UCLA mini-postdoc then Stanford postdoc.
- Behzad Amiri, EE Department, UCLA, PhD 2015. Dissertation title: “Theory and Practice of Non-Binary Graph Based Codes: A Combinatorial View”. Now Senior Engineer at Pure Storage.
- Ryan Gabrys, EE Department, UCLA, PhD, 2014. Dissertation title: “Channel Coding Strategies for the Emerging Data Storage Systems”. Now Senior Scientist at Army-Spawar and post-doc at UIUC.
- Chu-Hsiang Huang, EE Department, UCLA, PhD 2015. Dissertation title: “Iterative Information Processing on Unreliable Hardware: An Information Theoretic Approach”. Now Senior Engineer at Qualcomm.
- Jiadong Wang (co-advised with R. Wesel), EE Department, UCLA, PhD, 2012. Dissertation title: “Absorbing Set Analysis of LDPC Codes and Read-Channel Quantization in Flash Memory”. Now Senior Engineer at Qualcomm.

Graduated MS Students

- Kayvon Mazooji, EE Department, UCLA, M.S, 2016.
- Amirhossein Reisizadeh, EE Department, UCLA, M.S, 2016.

- Chimnayi Lanka, EE Department, UCLA, M.S., 2016.
- Clayton, Schoeny, EE Department, UCLA, M.S, 2014.
- Eric Goss, EE Department, UCLA, M.S, 2014.
- Frederic Sala, EE Department, UCLA, M.S., 2013, Best Masters Thesis in Signals and Systems, EE Department. Outstanding Masters Thesis Award, UCLA School of Engineering. 2015-2016 Dissertation Year Fellowship.
- Yizeng Sun, EE Department, UCLA, M.S., 2013.
- Behzad Amiri, EE Department, UCLA, M.S., 2012.
- Zhujun Lin, EE Department, UCLA, M.S., 2012.
- Ben-Yue Chang, EE Department, UCLA, M.S., 2011.
- Chi-Wei Lin, EE Department, UCLA, M.S., 2011.
- Yifan Sun, EE Department, UCLA, M.S., 2011.

Past Academic Visitors

- Arturo Flores (graduate student at INAOE, Mexico), EE Department, UCLA, 2014.
- Wilson Barbosa (graduate student at INAOE, Mexico), EE Department, UCLA, 2013.
- Shancheng Zhao (graduate student at Sun-yat Sen University, China), EE Department, UCLA, 2013-2014.

Past Undergraduate Students

- Nian Guo, EE Department, UCLA, 2016-2017. Next stop Caltech graduate program.
- Chi-Yo Tsai, EE Department, UCLA, 2015-2016.
- Manie Tadayon, EE Department, UCLA, 2014-2015. Next stop UCLA graduate program.
- Jimmy Zhu, EE Department, UCLA, 2012-2013. Next stop UCLA graduate program.
- Aaditya Ramesh, EE Department, UCLA, 2011-2012. Next stop Cornell University graduate program.
- Jiajun Zhang, EE Department, UCLA, 2011-2012. Next stop Northwestern University graduate program.
- Yun-Feng (Dennis) Lo, EE Department, UCLA, 2011.
- Babak Khouienia, EE Department, UCLA, 2011. Next stop UCLA graduate program.
- Pamela Lee, EE Department, UC Berkeley, 2008. Next stop UC Berkeley graduate program.

OUTREACH
ACTIVITY

Los Angeles Computing Circle (LACC), UCLA, 2011 – present.

- Co-founder (with Profs. P. Gupta and M. Srivastava, UCLA) of LACC, a brand-new outreach program aimed at promoting careers in electrical and computer engineering among talented and underrepresented high-schoolers.

PUBLICATIONS

Monographs

1. L. Dolecek and F. Sala, Channel Coding Methods for Non-Volatile Memories, Foundations and Trends in Communications and Information Theory, Vol. 13 (1), pp. 1- 136, February 2016.

Book Chapters

1. F. Sala, C. Schoeny, and L. Dolecek, “Advanced Algebraic and Graph-Based ECC Schemes for Flash Memories,” to appear in *3-D Flash Memories*, Ed. Rino Micheloni, Springer, Aug. 2016.

2. L. Dolecek, “Towards practical graph-based, iteratively decoded channel codes: insights through absorbing sets,” in *Tractability*, eds. L. Bordeaux, Y. Hamadi, and P. Kohli, Cambridge University Press, Mar. 2014.

Guest Editorials

1. L. Dolecek, M. Blaum, S. Bruck, A. Jiang, K. Ramchandran, and B. Vasic, “Guest Editorial: Communication Methodologies for the Next Generation Data Storage Systems,” *IEEE Journal on Selected Areas in Communications*, vol. 32 (5), pp. 825 – 830, May 2014.

Refereed Journal Publications

1. L. Dolecek and Y. Cassuto, “Channel Coding for Non-Volatile Memory Technologies: Recent Advances and New Opportunities,” *Proceedings of the IEEE*, 2017, to appear.
2. F. Sala, R. Gabrys, C. Schoeny, and L. Dolecek, Exact Reconstruction from Insertions in Synchronization Codes, *IEEE Transactions on Information Theory*, 2017, vol. 63 (4), pp. 2428 – 2445, April 2017.
3. F. Sala, C. Schoeny, S. Kabir, D. Divsalar, and L. Dolecek, On Nonuniform Noisy Decoding for LDPC Codes with Application to Radiation-Induced Errors, *IEEE Transactions on Communications*, 2017, to appear.
4. H. Esfahanizadeh, A. Hareedy, and L. Dolecek, “Spatially-Coupled Codes Optimized for Magnetic Recording Applications, *IEEE Transactions on Magnetics*, vol. 53 (2), pp. 1-11, Feb. 2017.
5. A. Hareedy, C. Lanka, and L. Dolecek, “A General Non-Binary LDPC Code Optimization Framework Suitable for Dense Flash Memory and Magnetic Storage, *IEEE Journal On Selected Areas of Communications (JSAC) Special Issue on Data Storage*, vol. 34 (9), pp. 2402 – 2415, Sept. 2016.
6. B. Amiri, A. Reiszadeh, H. Esfahanizadeh, J. Kliever, and L. Dolecek, “Optimized Design of Finite-Length Separable Circulant-Based Spatially-Coupled Codes: An Absorbing Set-Based Analysis, *IEEE Transactions on Communications*, vol. 64 (10) pp. 4029 – 4043, Oct. 2016.
7. A. Hareedy, B. Amiri, R. Galbraith, and L. Dolecek, “Non-Binary LDPC Codes for Magnetic Recording Channels: Error Floor Analysis and Optimized Code Design, *IEEE Transactions on Communications*, vol. 64 (8), pp. 3194 – 3207, Aug. 2016.
8. F. Sala, C. Schoeny, N. Bitouze, and L. Dolecek, “Synchronizing Files from a Large Number of Insertions and Deletions, *IEEE Transactions on Communications*, vol. 64 (6), pp. 2258 – 2273, June 2016.
9. R. Gabrys, E. Yaakobi, F. Farnoud, F. Sala, S. Bruck, and L. Dolecek, Codes Correcting Erasures and Deletions for Rank Modulation, *IEEE Transactions on Information Theory*, vol. 62 (1), pp. 136 – 150, Jan. 2016.
10. C.-H. Huang, Y. Li, and L. Dolecek, “ACOCO: Adaptive Coding for Approximate Computing on Faulty Memories,” *IEEE Transactions on Communications*, vol. 63 (12), pp. 4615 – 4628, December 2015.
11. L. Wanner, L. Lai, A. Rahimi, M. Gottscho, P. Mercati, C.-H. Huang, F. Sala, Y. Agarwal, L. Dolecek, N. Dutt, P. Gupta, R. Gupta, R. Jhala, R. Kumar, S. Lerner, S. Mitra, A. Nicolau, T. Simunic-Rosing, M. B. Srivastava, S. Swanson, D. Sylvester, and Y. Zhou, “NSF Expedition on Variability-Aware Software: Recent Results and Contributions,” *Information Technology*, vol. 57 (3), pp. 181 – 198, Jun. 2015.
12. Y. Li, Y. Chi, C.-H. Huang, and L. Dolecek, “Orthogonal Matching Pursuit on Noisy Circuits,” *IEEE Transactions on Communications*, vol. 63 (4), pp. 1 – 14, Apr. 2015.

13. R. Gabrys, E. Yaakobi, and L. Dolecek, "Correcting Grain-Errors in Magnetic Media," *IEEE Transactions on Information Theory*, vol. 61 (5), pp. 2256 – 2272, May 2015. **2016 Best Student Paper Award IEEE Data Storage Society**
14. R. Gabrys and L. Dolecek, "Constructions of Non-Binary WOM-Codes for Multilevel Flash Memories," *IEEE Transactions on Information Theory*, vol. 61 (4), pp. 1905-1919, Apr. 2015.
15. C.-H. Huang, Y. Li, and L. Dolecek, "Belief Propagation Algorithms on Noisy Hardware," *IEEE Transactions on Communications*, vol. 63 (1), pp. 11 – 24, Jan. 2015.
16. F. Sala, K. A. S. Immink, and L. Dolecek, "Error Control Schemes for Modern Flash Memories: Solutions for Flash Deficiencies," *IEEE Consumer Electronics*, vol. 4 (1), pp. 66-73, Jan. 2015.
17. R. Gabrys, F. Sala, and L. Dolecek, "Coding for Unreliable Flash Memory Cells," *IEEE Communication Letters*, vol. 18 (9), pp. 1491 – 1494, Jul. 2014.
18. L. Dolecek, D. Divsalar, Y. Sun and B. Amiri, "Non-Binary Protograph-Based LDPC Codes: Enumerators, Analysis, and Designs," *IEEE Transactions on Information Theory*, vol. 60 (7), pp. 3913 – 3941, Jul. 2014.
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21. C.-H. Huang, Y. Li, and L. Dolecek, "Gallager B LDPC Decoder with Transient and Permanent Errors," *IEEE Transactions on Communications*, vol. 62 (1), pp. 15 – 28, Jan. 2014.
22. S. M. S. Tabatabaei and L. Dolecek, "A Deterministic, Polynomial-time Protocol for Synchronizing from Deletions," *IEEE Transactions on Information Theory*, vol. 60 (1), pp. 397 – 407, Jan. 2014.
23. M. Qazi, M. Tikekar, L. Dolecek, D. Shah, and A. Chandrakasan, "A Technique for Efficient Evaluation of SRAM Timing Failure," *IEEE Transactions on VLSI*, vol. 21 (8), pp. 1558 – 1562, Aug. 2013.
24. F. Sala, R. Gabrys and L. Dolecek, "Dynamic Threshold Schemes for Multi-Level Non-Volatile Memories," *IEEE Transactions on Communications*, vol. 61 (7), pp. 2624 – 2634, Jul. 2013.
25. S. Tabatabaei, H. Cho, S. and L. Dolecek, "Gallager B Decoder on Noisy Hardware," *IEEE Transactions on Communications*, vol. 61 (5), pp. 1660 – 1673, May 2013.
26. R. Gabrys, E. Yaakobi, and L. Dolecek, "Graded Bit-Error Correcting Codes with Applications to Flash Memory," *IEEE Transactions on Information Theory*, vol. 59 (4), pp. 2315 – 2327, Apr. 2013.
27. J. Wang, L. Dolecek, and R. Wesel, "The Cycle Consistency Matrix Approach to Absorbing Sets in Separable Circulant-Based LDPC Codes," *IEEE Transactions on Information Theory*, vol. 59 (4), pp. 2293 – 2314, Apr. 2013.
28. B. Amiri, C. W. Lin, and L. Dolecek, "Asymptotic Distribution of Absorbing Sets and Fully Absorbing Sets for Regular Sparse Code Ensembles," *IEEE Transactions on Communications*, vol. 61 (2), pp. 455 – 464, Feb. 2013.
29. P. Gupta, Y. Agarwal, L. Dolecek, N. Dutt, R. K. Gupta, R. Kumar, S. Mitra, A. Nicolau, T. Simunic Rosing, M. B. Srivastava, S. Swanson, and D. Sylvestoer, "Underdesigned and Opportunistic Computing in Presence of Hardware Variability," *IEEE Transactions on CAD*, vol. 32 (1), pp. 8 – 23, Jan. 2013.
30. S. M. S. Tabatabaei, S. Huang, and L. Dolecek, "Optimal Design of a Gallager B Noisy Decoder for Irregular LDPC Codes," *IEEE Communication Letters*, vol. 16 (12), pp. 2052 – 2055, Dec. 2012.

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32. L. Dolecek and V. Anantharam, “Repetition Error Correcting Sets: Explicit Constructions and Prefixing Methods,” *SIAM Journal on Discrete Mathematics*, vol. 23 (4), pp. 2120 – 2146, Jan. 2010.
33. 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 Transactions on Information Theory*, vol. 56 (1), pp. 181 – 201, Jan. 2010.
34. Z. Zhang, L. Dolecek, B. Nikolic, V. Anantharam and M. Wainwright, “Design of LDPC Decoders for Low Bit Error Rate Performance: Quantization and Algorithm Choices,” *IEEE Transactions on Communications*, vol. 57 (11), pp. 3258 – 3268, Nov. 2009.
35. L. Dolecek, P. Lee, Z. Zhang, V. Anantharam, B. Nikolic, and M. J. Wainwright, “Predicting Error Floors of LDPC Codes: Deterministic Bounds and Estimates,” *IEEE Journal on Selected Areas of Communications*, vol. 27 (6) pp. 908 – 917, August 2009.
36. L. Dolecek and V. Anantharam, “Using Reed Muller Codes in Channels With Synchronization and Substitution Errors,” *IEEE Transactions on Information Theory*, vol. 53 (4), pp. 1430 – 1443, April 2007.

Refereed and Invited Conference Publications

1. H. Esfahanizadeh, A. Hareedy, and L. Dolecek, “A Novel Combinatorial Framework to Construct Spatially-Coupled Codes: Minimum Overlap Partitioning,” in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Aachen, Germany, June, 2017.
2. F. Sala, C. Schoeny, S. Kabir, D. Divsalar, and L. Dolecek, Flash Memories in High Radiation Environments: LDPC Decoder Study, in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Nov. 2016 (invited).
3. H. Esfahanizadeh, A. Hareedy, and L. Dolecek, Spatially Coupled LDPC Codes Optimized for 1-D Magnetic Recording Channels, in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Nov. 2016.
4. K. Mazooji, F. Sala, G. van Den Broeck, and L. Dolecek, Robust Channel Coding Strategies for Machine Learning Data, in Proc. *IEEE 54th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2016 (invited).
5. L. Dolecek, “Coding Theory for Robust Computing: Models, Tools, Applications, in Proc. *IEEE International Symposium on Turbo Coding and Iterative Information Processing*, Brest, France, Sept. 2016 (invited).
6. A. Reisizadeh, C. Schoeny, C.Y. Tsai, and L. Dolecek, “Approximate File Synchronization: Upper Bounds and Interactive Algorithms, in Proc. *IEEE Information Theory Workshop (ITW)*, Cambridge, UK, Sept. 2016.
7. L. Dolecek, H. Esfahanizadeh, A. Hareedy, “Spatially-Coupled Codes for Advanced Magnetic Recording,” in Proc. *The 27th IEEE Magnetic Recording Conference (TMRC)*, Stanford Univ., Aug. 2016 (invited).
8. A. Hareedy, C. Lanka, C. Schoeny, and L. Dolecek, “The Weight Consistency Matrix Framework for General Non-Binary LDPC Code Optimization: Applications in Flash Memories, in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Barcelona, Spain, July 2016.
9. F. Sala, R. Gabrys, C. Schoeny, K. Mazooji, and L. Dolecek, “Exact Sequence Reconstruction for Insertion-Correcting Codes, in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Barcelona, Spain, July 2016.

10. M. Gottscho, C. Schoeny, L. Dolecek and P. Gupta, "Software Defined Error-Correcting Codes, Workshop on Silicon Errors in Logic System Effects (SELSE), March 2016. **Best of SELSE & presented by invitation at DSN 2016.**
11. F. Sala, H. Duwe, L. Dolecek, and R. Kumar, "A Unified Framework for Error Correction Techniques in On-Chip Memories, Workshop on Silicon Errors in Logic System Effects (SELSE), March 2016, **Best of SELSE & presented by invitation at DSN 2016.**
12. P. Schlafer, C.H. Huang, C. Schoeny, C. Weiss, Y. Li, N. When, and L. Dolecek, "Error Resilience and Energy Efficiency: An LDPC Decoder Design Study," in Proc. *DATE Conference*, Dresden, Germany, March 2016.
13. A. Hareedy, B. Amiri, R. Galbraith, and L. Dolecek, "Non-binary LDPC Code Optimization for Partial Response Channels," in Proc. *IEEE Globecom*, San Diego, CA, Dec. 2015. **Best Paper Award.**
14. F. Sala, C. Schoney, D. Divsalar, and L. Dolecek, "Asymmetric ECC for Flash in High-Radiation Environments," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA Nov. 2015. (invited)
15. C. Schoeny, F. Sala, and L. Dolecek, "Analysis and Coding Schemes for the Flash Normal-Laplace Mixture Channel, in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Hong Kong, June, 2015.
16. F. Sala, C. Schoeny, and L. Dolecek, "Three Novel Combinatorial Theorems for the Insertion/Deletion Channel," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Hong Kong, June, 2015.
17. F. Sala, C. Schoeny, D. Divsalar, and L. Dolecek, "Asymmetric Error-Correcting Codes for Flash Memories in High-Radiation Environments," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Hong Kong, June, 2015.
18. C.H. Huang, Y. Li, and L. Dolecek, "Adaptive Error Correction Coding Scheme for Computations in the Noisy Min-Sum Decoder," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Hong Kong, June, 2015.
19. B. Amiri, A. Reiszadeh, J. Kliever, and L. Dolecek, "Optimized Array-Based Spatially-Coupled LDPC Codes: An Absorbing Set Approach," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Hong Kong, June, 2015.
20. F. Sala, R. Gabrys, and L. Dolecek, "Gilbert-Varshamov-like Lower Bounds for Deletion-Correcting Codes," in Proc. *IEEE Information Theory Workshop (ITW)*, Hobart, Australia, Nov. 2014.
21. B. Amiri, A. Flores, and L. Dolecek, "Design of Non-binary Quasi-Cyclic LDPC Codes by Absorbing Set Removal," in Proc. *IEEE Information Theory Workshop (ITW)*, Hobart, Australia, Nov. 2014.
22. Y. Toriyama, B. Amiri, L. Dolecek, and D. Markovic, "Logarithmic Quantization Scheme for Reduced Hardware Cost and Improved Error Floor in Non-Binary LDPC Codes," in Proc. *IEEE Globecom*, Austin, TX, Dec. 2014.
23. C. Schoeny, N. Bitouze, F. Sala, and L. Dolecek, "Efficient File Synchronization: Extensions and Simulations," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA Nov. 2014. (invited)
24. Y. Toriyama, B. Amiri, L. Dolecek, and D. Markovic, "Field-Order Based Hardware Cost Analysis of Non-Binary LDPC Decoders," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2014.
25. C.-H. Huang, Y. Li, and L. Dolecek, "Noisy Belief Propagation," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2014.
26. F. Sala. R. Gabrys, and L. Dolecek, "Deletions in Multipermutations," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Honolulu, HI, July 2014.

27. D. Mitchell, L. Dolecek, and D. Costello, "Absorbing Set Characterization of Array-Based Spatially Coupled LDPC Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Honolulu, HI, July 2014.
28. R. Gabrys, E. Yaakobi, F. Farnoud, F. Sala, S. Bruck, and L. Dolecek, "Single-Deletion-Correcting Codes over Permutations," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Honolulu, HI, July 2014.
29. N. Bitouze, F. Sala, S. M. S. Tabatabaei, and L. Dolecek, "A practical framework for efficient file synchronization," Proc. *IEEE 51st Allerton Conference on Communication, Control, and Computing*, Moticello, IL, Oct. 2013. (invited)
30. Y. Li and L. Dolecek, "Effects of Approximate Representation in Belief Propagation for Inference in Wireless Sensor Networks," accepted to Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
31. X. Wu, H. Chang, C.-H. Huang, Y. Wang, L. Dolecek, and G. Pottie, "Virtual Inertial Measurements for Motion Inference in Wireless Health," accepted to Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
32. M. Laghate, C.H. Huang, C.-K. Yu, L. Dolecek, and D. Cabric, "Identifying Statistical Mimicry Attacks in Distributed Spectrum Sensing," accepted to Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
33. F. Sala and L. Dolecek, "Constrained Rank Modulation," in Proc. *IEEE Information Theory Workshop (ITW)*, Sevilla, Spain, Sept. 2013.
34. S. Chakraborty, N. Bitouze, M. Srivastava, and L. Dolecek, "Protecting Data Against Unwanted Inferences," Proc. *IEEE Information Theory Workshop (ITW)*, Sevilla, Spain, Sept. 2013.
35. N. Bitouze and L. Dolecek, "Synchronization from Insertions and Deletions under a Non-binary, Non-uniform Source," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
36. F. Sala and L. Dolecek, "Counting Sequences Obtained from the Synchronization Channel," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
37. R. Gabrys, E. Yaakobi, and L. Dolecek, "Correcting Grain Errors in Magnetic Media," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
38. B. Amiri, J. Kliewer, and L. Dolecek, "Analysis and Enumeration of Absorbing Sets for Non-Binary Graph-Based Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
39. C. H. Huang, Y. Li, and L. Dolecek, "Gallager B LDPC Decoder with Transient and Permanent Errors," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, July 2013.
40. C. H. Huang and L. Dolecek, "Analysis of Finite-Alphabet Iterative Decoders Under Processing Errors," in Proc. *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May, 2013.
41. F. Sala, R. Gabrys, and L. Dolecek, "Dynamic Threshold Schemes for Multi-Level Nonvolatile Memories," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2012.
42. B. Amiri, S. Garani Srinivasa, and L. Dolecek, "Quantization, Absorbing Regions and Practical Message Passing Decoders," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2012.
43. B. Y. Chang, D. Divsalar, and L. Dolecek, "Non-binary Protograph-Based LDPC Codes for Short Block-lengths," in Proc. *IEEE Information Theory Workshop (ITW)*, Lausanne, Switzerland, Sept. 2012.

44. S. Tabatabaei Yazdi and L. Dolecek, "Synchronization from Deletions Through Interactive Communication," in Proc. *IEEE International Symposium on Turbo Coding and Iterative Information Processing (ISTC)*, Gothenburg, Sweden, August, 2012.
45. R. Gabrys, E. Yaakobi, L. Grupp, S. Swanson, and L. Dolecek, "Tackling Intracell Variability in TLC Flash Through Tensor Product Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Boston, MA, July 2012.
46. D. Divsalar and L. Dolecek, "Graph Cover Ensembles of Non-binary Protograph LDPC Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Boston, MA, July 2012.
47. S. M. S. Tabatabaei Yazdi, H. Cho, Y. Sun, S. Mitra and L. Dolecek, "Probabilistic Analysis of Gallager B Faulty Decoder," in Proc. *IEEE International Conference on Communications (ICC)*, Ottawa, Canada, June 2012.
48. F. Gong, S. Basir-Kazeruni, L. Dolecek and L. He, "Fast Estimation of SRAM Failure Rate Using Probability Collectives," in Proc. *ACM International Symposium on Physical Design (ISPD)*, Napa, CA, March 2012.
49. R. Gabrys and L. Dolecek, "Coding for the Binary Asymmetric Channel," in Proc. *IEEE International Conference on Computing, Networking and Communications (ICNC)*, Maui, HI, Jan. 2012.
50. D. Divsalar and L. Dolecek, "On the Typical Minimum Distance of Protograph-Based Non-Binary LDPC Codes," in Proc. *IEEE Information Theory and Applications Workshop (ITA)*, La Jolla, CA, Feb. 2012. (invited)
51. R. Gabrys and L. Dolecek, "Spatially-Aware Adaptive Error Correcting Codes for Flash Memory," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2011.
52. J. Zhang, J. Wang, S. G. Srinivasa, and L. Dolecek, "Achieving Flexibility in LDPC Code Design by Absorbing Set Elimination," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2011.
53. Y. Sun and L. Dolecek, "Complexity Analysis of Interior Point Methods for LP Decoding," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2011.
54. R. Gabrys, E. Yaakobi, L. Dolecek, P. Siegel, A. Vardy, and J. K. Wolf, "Non-binary WOM Codes for Multilevel Flash Memories," in Proc. *IEEE Information Theory Workshop (ITW)*, Paraty, Brazil, Oct. 2011.
55. D. Divsalar and L. Dolecek, "Ensemble Analysis of Pseudocodewords of Non-binary Protograph-based LDPC codes," in Proc. *IEEE Information Theory Workshop (ITW)*, Paraty, Brazil, Oct. 2011.
56. B. Y. Chang, L. Dolecek and D. Divsalar, "EXIT Chart Analysis and Design of Non-binary Protograph Based LDPC Codes," in Proc. *IEEE Military Communications Conference (Milcom)*, Baltimore, MD, Nov. 2011.
57. F. Penna, Y. Sun, L. Dolecek and D. Cabric, "Joint Spectrum Sensing and Detection of Malicious Nodes via Belief Propagation," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Houston, TX, Dec. 2011.
58. R. Gabrys and L. Dolecek, "Characterizing Capacity Achieving Write Once Memory Codes for Multilevel Flash Memories," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, St. Petersburg, Russia, July - Aug. 2011.
59. D. Divsalar and L. Dolecek, "Enumerators for Protograph-Based Ensembles of Nonbinary LDPC Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, St. Petersburg, Russia, July - Aug. 2011.

60. J. Wang, D. Dolecek, Z. Zhang and R. Wesel, "Absorbing Set Spectrum Approach for Practical Code Design," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, St. Petersburg, Russia, July - Aug. 2011.
61. J. Wang, L. Dolecek and R. Wesel, "Controlling LDPC Absorbing Sets via the Null Space of the Cycle Consistency Matrix," in Proc. *IEEE International Conference on Communications (ICC)*, Kyoto, Japan, June 2011.
62. B. Y. Chang, M. Ivkovic and L. Dolecek, "Computationally-Efficient Iterative Decoding for Reliable System Design: Min-Sum Refined," in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, Rio de Janeiro, Brazil, May 2011.
63. J. Wang, L. Dolecek and R. Wesel, "LDPC Absorbing Sets, the Null Space of the Cycle Consistency Matrix, and Tanner's Constructions," in Proc. *IEEE Information Theory and Applications Workshop (ITA)*, La Jolla, CA, Feb. 2011. (invited)
64. C. W. Lin and L. Dolecek, "Asymptotic Distribution of Absorbing Sets and Fully Absorbing Sets for Regular Sparse Code Ensembles," in Proc. *IEEE Australian Communications Theory Workshop (AusCTW)*, Melbourne, Australia, Feb. 2011.
65. L. Dolecek, "Towards Longer Lifetime of Emerging Memory Technologies Using Number Theory," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Miami, FL, Dec. 2010.
66. L. Dolecek, Z. Wang and Z. Zhang, "Towards Improved LDPC Code Designs Using Absorbing Set Spectrum Properties," in Proc. *IEEE International Symposium on Turbo Coding and Iterative Information Processing (ISTC)*, Brest, France, Sept. 2010.
67. L. Dolecek, "On Absorbing Sets of Structured Sparse Graph Codes," in Proc. *IEEE Information Theory and Applications Workshop (ITA)*, La Jolla, CA, Jan. - Feb. 2010. (invited)
68. G. Jovanovic and L. Dolecek, "Novel Multiplierless Wide-band CIC Compensator," in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, Paris, France, May - June 2010.
69. M. Qazi, M. Tikekar, L. Dolecek, D. Shah, and A.P. Chandrakasan, "Loop Flattening & Spherical Sampling: Highly Efficient Model Reduction Techniques for SRAM Yield Analysis" in Proc. *Design, Automation, and Test in Europe Conference (DATE)*, Dresden, Germany, March 2010.
70. Z. Zhang, L. Dolecek, P. Lee, V. Anantharam, M. J. Wainwright, B. Richards, B. Nikolic, "Low error rate LDPC decoders," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2009.
71. L. Dolecek and D. Shah, "Influence in a Large Society: Interplay Between Information Dynamics and Network Structure," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Seoul, Korea, June-July 2009.
72. Z. Zhang, L. Dolecek, B. Nikolic, V. Anantharam, M. J. Wainwright, "Lowering LDPC Error Floors by Postprocessing," in Proc. *IEEE Global Telecommunications Conference (GLOBECOM)*, New Orleans, LA, Nov. 2008.
73. L. Dolecek, M. Qazi, D. Shah and A. Chandrakasan, "Breaking the Simulation Barrier: SRAM Evaluation through Norm Minimization," in Proc. *IEEE International Conference on Computer-Aided Design (ICCAD)*, San Jose, CA, Nov. 2008.
74. L. Dolecek and D. Shah, "Social Networks With(out) Influential Agents," in Proc. *Third Congress of the Game Theory Society (GAMES 2008)*, Evanston, IL, July 2008.
75. P. Lee, L. Dolecek, Z. Zhang, V. Anantharam, B. Nikolic and M. Wainwright, "Error Floors in LDPC Codes: Fast Simulation, Bounds and Hardware Emulation," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Toronto, Canada, July 2008.
76. L. Dolecek and V. Anantharam, "Prefixing Method for Correcting Repetition Errors," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Toronto, Canada, July 2008.

77. L. Dolecek, Z. Zhang, M. J. Wainwright, V. Anantharam, B. Nikolic, "Evaluation of the Low Frame Error Rate Performance of LDPC Codes Using Importance Sampling," in Proc. *IEEE Information Theory Workshop (ITW)*, Lake Tahoe CA, Sept. 2007.
78. L. Dolecek, Z. Zhang, V. Anantharam, M. Wainwright, and B. Nikolic, "Analysis of Absorbing Sets for Array-Based LDPC Codes," in Proc. *IEEE International Conference on Communications (ICC)*, Glasgow, United Kingdom, June 2007.
79. Z. Zhang, L. Dolecek, V. Anantharam, M. Wainwright, and B. Nikolic, "Quantization Effects in Low-Density Parity-Check Decoders," in Proc. *IEEE International Conference on Communications (ICC)*, Glasgow, United Kingdom, June 2007.
80. L. Dolecek and V. Anantharam, "On Subsets of Binary Strings Immune to Multiple Repetitions," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Nice, France, June 2007, pp. 1691-1695.
81. L. Dolecek and V. Anantharam, "On Communication over Channels with Varying Sampling Rate," in Proc. *Information Theory and Applications Workshop (ITA)*, UC San Diego, La Jolla, Jan.-Feb. 2007.
82. Z. Zhang, L. Dolecek, B. Nikolic, V. Anantharam and M. Wainwright, "Investigation of error floors of a structured low-density parity-check code by hardware simulation," in Proc. *IEEE Global Telecommunications Conference (GLOBECOM)*, San Francisco, Nov. – Dec. 2006. Best paper award finalist.
83. L. Dolecek and V. Anantharam, "A Synchronization Technique for Array-Based LDPC Codes in Channels with Varying Sampling Rate," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Seattle, WA, July 2006.
84. L. Dolecek and V. Anantharam, "Run-length Properties of a Reed-Muller RM(1,m) Code with Applications in Channels With at Most One Synchronization Error," in Proc. *42nd Allerton Conference on Communications, Control, and Computing*, Champaign, IL, Sept. – Oct. 2004.

Refereed Workshop Articles (without proceedings)

1. F. Sala, C. Schoeny, S. Kabir, D. Divsalar, L. Dolecek, "Modeling the effects of radiation induced soft errors on LDPC decoding," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2017.
2. A. Hareedy, C. Lanka, and L. Dolecek, "Non-Binary LDPC Code Optimization for Modern Storage Systems," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2017.
3. F. Sala, C. Schoeny, and L. Dolecek, "Approximate and Noisy Computing: Connections to the Information-Theory World," *The 2015 Workshop on Approximate Computing Across the Stack*, Atlanta, GA, April 2016.
4. R. Gabrys, E. Yaakobi, F. Sala, F. Farnoud, S. Bruck, and L. Dolecek, "Codes Correcting Erasures and Deletions for Rank Modulation," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2016.
5. F. Sala, C. Schoeny, D. Divsalar, and L. Dolecek, "Error-Correcting Codes for Radiation-Induced Error Patterns in Flash Memories," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2016.
6. C.H. Huang, Y. Li, and L. Dolecek, "ACOCO: Adaptive Coding for Approximate Computing on Faulty Memories," *The 2015 Workshop on Approximate Computing Across the Stack*, Portland, OR, June 2015.
7. C. Schoeny, B. Amiri, A. Hareedy, and L. Dolecek, "Quasi-Cyclic Non-Binary LDPC Codes for MLC NAND Flash Memory," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2015.

8. R. Gabrys and L. Dolecek, "Coding for Unreliable Memory Cells in TLC Flash," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2014.
9. F. Sala, R. Gabrys, and L. Dolecek, "Constrained Rank Modulation for Flash Memories," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2014.
10. F. Sala, R. Gabrys, and L. Dolecek, "Dynamic Threshold Schemes for Multi-Level Nonvolatile Memories," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2013.
11. R. Gabrys, E. Yaakobi, L. Grupp, S. Swanson, and L. Dolecek, "Tackling Intracell Variability in TLC Flash Through Tensor Product Codes," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2012.
12. R. Gabrys and L. Dolecek, "Coding Schemes and Information Theoretic Bounds for Generalized Write Once Memories," *Non-Volatile Memories Workshop (NVMW)*, UCSD, San Diego, CA, March 2012.