

Lara Dolecek, PhD

CONTACT INFORMATION

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ACADEMIC EMPLOYMENT

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

Full Professor, Department of Electrical and Computer Engineering, Department of Mathematics (by courtesy), 2018 - present.

Associate Professor, Department of Electrical and Computer Engineering, 2015 - 2018.

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

- Research, graduate, and undergraduate teaching and mentoring in coding theory, with applications to modern data storage, computing, and information processing systems.
- Founder and Director of Laboratory for Robust Information Systems (LORIS).

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

- Board of Governors, IEEE Information Theory Society, Elected Member 2022-2024.
- Distinguished Lecturer, IEEE Information Theory Society, 2021-2023.
- Memorable Paper Award at the 2021 Non-Volatile Memories Workshop, UC San Diego.
- IEEE Data Storage Society 2018-2019 Best Student Paper Award.
- Finalist for the Memorable Paper Award at the 2023 Non-Volatile Memories Workshop, UC San Diego.
- Runner up for the Memorable Paper Award at the 2022 Non-Volatile Memories Workshop, UC San Diego.
- Runner up for the Memorable Paper Award at the 2019 Non-Volatile Memories Workshop, UC San Diego.
- Memorable Paper Award at the 2018 Non-Volatile Memories Workshop, UC San Diego.
- Runner Up for the Memorable Paper Award at the 2018 Non-Volatile Memories Workshop, UC San Diego.
- Best of SELSE Award, March 2018.
- Best Paper Award at the Embedded Systems Week – International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES), Nov. 2017.
- IEEE Data Storage Society 2016 Best Student Paper Award.
- Best of SELSE Award, March 2016 – received two awards, for two separate papers.
- Best Paper Award, IEEE Globecom Conference, 2015.
- IBM Faculty Award, 2014.
- Northrop Grumman Excellence in Teaching Award, 2013, UCLA School of Engineering.
- Intel Early Career Faculty Award, 2013.
- 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, UCLA 2011.
- David J. Sakrison Memorial Prize for the most outstanding dissertation in Electrical Engineering and Computer Sciences, UC Berkeley, 2007.
- Dissertation Year Fellowship, UC Berkeley, 2006-2007.
- GAANN Graduate Fellowship, UC Berkeley, 2004-2005.
- Mentored Research Award, UC Berkeley, 2003-2004.
- Eugene Cota-Robles Fellowship, UC Berkeley, 2000-2003.
- Marian Wojciech Para Memorial Prize, UC Berkeley, 1999.
- Member of HKN, TBP and Golden Key Honor societies.
- Senior member of *IEEE* since 2012.

PROFESSIONAL
ACTIVITIES

- Distinguished Lecturer of the *IEEE Information Theory Society*, 2021-2023.
- Secretary of the *IEEE Information Theory Society*, 2019 – 2021.
- Editorship
 - Associate Editor for Coding Theory for *IEEE Transactions on Information Theory*, 2019 – present.
 - Guest Editor for the Special Issue dedicated to V. I. Levenshtein, *IEEE Transactions on Information Theory*, 2020.
 - Associate Editor for Coding Theory for *IEEE Transactions on Communications*, 2013 – 2019.
 - 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
 - General Co-Chair, Non-Volatile Memories Workshop (NVMW), 2023.
 - Technical Program Committee Chair, IEEE Information Theory Workshop, 2022.
 - Program Chair, Non-Volatile Memories Workshop (NVMW), 2021.
 - 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 International Symposium on Information Theory (ISIT)*, 2023; *IEEE International Conference on Communications (ICC)*, 2023; *IEEE Information Theory Workshop (ITW)*, 2023; *IEEE International Symposium on Information Theory (ISIT)*, 2022; *IEEE International Conference on Communications (ICC)*, 2022; *IEEE Information Theory Workshop (ITW)*, 2021; *IEEE International Symposium on Information Theory (ISIT)*, 2021; *IEEE International Conference on Communications (ICC)*, 2021; *Non-Volatile Memories Workshop (NVMW)*, 2020; *IEEE International Symposium on Information Theory (ISIT)*, 2020; *Third Conference on Systems and Machine Learning*, 2020; *IEEE Information Theory Workshop (ITW)*, 2019; *IEEE Globecom*, 2019; *IEEE International Symposium on Information Theory (ISIT)*, 2019; *IEEE Globecom*, 2018; *IEEE International Conference on Communications (ICC)*, 2018; *IEEE International Symposium on Turbo Coding (ISTC)*, 2018; *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
 - “Foundations of finite-length graph-based codes with applications to data storage, quantum communications, and blockchains,” Croucher Summer Course on Information Theory, Chinese University of Hong Kong, Aug. 2023.
 - “Graph-Based Codes for Decentralized Adversarial Networks,” European Summer School on Communication Systems, Munich, Germany, June 2023.
 - “Modern Coding Theory And Connections to Error-Efficient Computing,” presented at the *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*, 2018, session title: “Coding for Memories”; *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 *MLSys*, *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)

SELECTED
UNIVERSITY
SERVICE

- Fast Track Program Director, ECE Department, UCLA, 2024-ongoing.
- Area Director, Signals and Systems, ECE Department, UCLA, 2020-2023.
- Student awards committee, ECE Department, UCLA, 2023.
- Member of the Quantum Search Committee, HSSEAS, UCLA, 2022-present.
- Member of the Data Science Committee, HSSEAS, UCLA, 2022-present.
- Member of the Preliminary Examination Committee, ECE Department, UCLA, 2022-present.
- Member of the Recruitment Committee, ECE Department, UCLA, 2019-present.
- Hellman Fellows Selection Committee, UCLA, 2019.
- ECE Department Representative to UCLA School of Engineering Faculty Executive Committee, 2017-2020.
- Co-organizer of Undergraduate Visit Day, EE Department, UCLA, 2017.
- Member of an Ad-Hoc Recruitment Evaluation Committee, ECE Department, UCLA, 2017-present.
- Member of an Ad-Hoc Promotion Committee, ECE Department, UCLA, 2019-present.
- Member and then Chair of the Non-Tenure Evaluation Committee, ECE Department, UCLA, 2016-present.
- Hellman Fellows Selection Committee, UCLA, 2019.
- 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 ECE students (Tips on Getting into Graduate Schools, Post-College Career Choices, etc.), EE Department, UCLA, 2011-present.

CURRICULUM
DEVELOPMENT

- Introduction and complete development of “ECE M148: Introduction to Data Science,” ECE Department/Computer Engineering Track, UCLA, 2022-present.
- Introduction and complete development of “ECE M146: Introduction to Machine Learning,” ECE Department/Computer Engineering Track, UCLA, 2017-present.
- Introduction and complete development of “ECE 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/Prof. H. Mamani) 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, “Channel Codes for Adversarial Decentralized Systems: Applications in Blockchains,” **Distinguished Speaker Seminar Series**, Women in AI and Networking, NSF EDGE Institute, June 2024.
- L. Dolecek, “Non-Binary LDPC Codes for Quantum Key Distribution,” **Keynote Speaker**, 2024 Munich Workshop on Shannon Coding Techniques, TU Munich, Germany, March 2024.
- L. Dolecek, “Efficient Information Reconciliation in Quantum Key Distribution Protocols Using Informed Design of Non-Binary LDPC Codes,” Simons Institute Program on Applications-Driven Coding Theory, UC Berkeley, Feb. 2024.
- L. Dolecek, “On Graph Codes for High-Dimensional QKD,” ITA Workshop, UCSD, Feb. 2024.
- L. Dolecek, “Channel Codes for Adversarial Decentralized Systems: Applications in Blockchains,” **Distinguished Speaker Seminar Series**, ECE Department, Texas A&M University, Feb. 2024.
- L. Dolecek, “Foundations of Finite-Length Graph-based Codes with Applications to Data Storage, Quantum Communications, and Blockchains,” Invited Lecturer, Croucher Summer Course in Information Theory, CUHK, Hong Hong, Aug. 2023.
- L. Dolecek, “Graph Codes for Decentralized Adversarial Networks: Applications in Blockchains,” **invited talk**, European Summer School on Communications, Munich, Germany, June 2023.
- L. Dolecek, “Three Cheers for Information Theory,” **Plenary Talk**, Information Theory and Applications (ITA) Workshop, UC San Diego, Feb. 2023.
- L. Dolecek, “Future NVM Research,” panelist, NVMW, UC San Diego, March 2023.
- L. Dolecek, “Variable-Coded Batch Matrix Multiplication,” invited lecture, Distributed Communication - Constrained Learning Workshop, EUSIPCO Conference, Belgrade, Serbia, Aug. 2022.
- L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: Graph-Based Code Design,” **Plenary talk**, Approximate Computing Workshop, Design and Automation Conference (DAC), San Francisco, CA, July 2022.
- L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: A Graph-Coding Perspective,” **Plenary Talk**, National Conference on Communications (NCC), India, May 2022.
- L. Dolecek. “How to Correct Errors ?” Math Prize for Girls, **Plenary Speaker**, November 2021.
- L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: A Graph-Coding Perspective,” Rutgers University, October 2021.
- L. Dolecek, “Context-Aware Coding for Computing Memories,” Approximate Systems Dagstuhl Seminar (by invitation only), July 2021.
- L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: A Graph-Coding Perspective,” University of Toronto, Canada, June 2021.
- L. Dolecek, “Spatially-Coupled Codes: Recent Trends and Applications in Data Storage and Memories,” IEEE Rourkela Subsection, India, June 2021.
- L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: A Graph-Coding Perspective,” *London Symposium on Information Theory (LSIT)*, May 2021.
- L. Dolecek, “Modulation and Coding for Energy-Time Entanglement Quantum Key Distribution,” *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2020.
- L. Dolecek, “Context-Aware Coding for Computing Memories,” *Center for Cyber Physical Systems and the Internet of Things Seminar Series*, University of Southern California, Los Angeles, CA, Dec. 2019.

- L. Dolecek, "A Finite-Length Construction of Irregular Spatially-Coupled Codes," *IEEE Information Theory Workshop*, Visby, Sweden, Aug. 2019.
- L. Dolecek, "Spatially-Coupled Codes: Recent Trends and Applications in Data Storage and Memories," **Plenary Talk**, *The 10th Annual Non-Volatile Memories Workshop*, UC San Diego, La Jolla, CA, Mar. 2019.
- L. Dolecek, "Error Correction and Detection for Computing Memories Using System Side Information," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2019.
- L. Dolecek, "Recent Advances in Spatially Coupled codes and Applications in Data Storage Systems," *Joint Mathematics Meeting*, American Mathematical Society, Baltimore, MD, Jan. 2019.
- L. Dolecek, "Spatially Coupled Codes for Modern Memories," **Plenary Talk**, *IEEE International Symposium on Turbo Coding (ISTC)*, Hong Kong, Hong Kong, Dec. 2018.
- L. Dolecek, "Error Correction and Detection for Computing Memories Using System Side Information," *IEEE Information Theory Workshop*, Guangzhou, China, Nov. 2018.
- L. Dolecek, "Robust Computing Under Hardware Noise: A Coding Theoretic Perspective," **Keynote Talk**, *The 7th Annual Henry Taub TCE Conference*, Technion, Haifa, Israel, Jun. 2017.
- L. Dolecek, "New Trends in Coding Theory & Opportunities in Modern Memories and Computing," *Electrical Engineering Systems Seminar, Caltech*, Pasadena, CA, May 2017.
- L. Dolecek, "Coding Theoretic Techniques for Modern Memories," **Plenary Talk**, *American Mathematical Society Annual Meeting*, Atlanta, GA, Dec. 2016.
- L. Dolecek, "Coding Theoretic Methods for Robust and Approximate Computing," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2017.
- L. Dolecek, "Flash Memories in High Radiation Environments: LDPC Decoder Study," *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2016.
- L. Dolecek, "Coding Theory for Robust Computing: Models, Tools, Applications," **Plenary Talk**, *IEEE International Symposium on Turbo Coding (ISTC)*, Brest, France, Sep. 2016.
- L. Dolecek, "Coding Theory for Modern Computing," *Communications Seminar, Texas A&M University*, College Station, TX, Apr. 2016.
- L. Dolecek, "ECC-based Iterative Computing Under Uncertainty: Theory and Applications," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2016.
- L. Dolecek, "New Problems in Coding Theory with Applications to Modern Data Storage and Memories," *Simons Institute*, UC Berkeley, Berkeley, CA, Feb. 2015.
- L. Dolecek, "Synchronizing Files Under a Large Number of Edits: Theory and Practice," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2015.
- L. Dolecek, "Mathematical Foundations of the Next-Generation Robust and Resource-Efficient Information Systems: Algorithms and Code Designs," *ISL Seminar, UIUC*, Urbana, IL, Nov. 2014.
- L. Dolecek, "Mathematical Foundations of the Next-Generation Robust and Resource-Efficient Information Systems: Algorithms and Code Designs," *Communications Theory and Systems Seminar, UC San Diego*, La Jolla, CA, 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*, Monticello, IL, Oct. 2013.
- L. Dolecek, "Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric," *ISL Colloquium, Stanford University*, Palo Alto, CA, Jun. 2013.

- L. Dolecek, "Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric," *Rutgers University*, New Brunswick, NJ, Jun. 2013.
- L. Dolecek, "Channel Coding Methods for Green Data Storage: Innovations Beyond the Hamming Metric," *Communications, Networks and Systems Seminar, University of Southern California*, Los Angeles, CA, May 2013.
- L. Dolecek, "Exploiting Variability in Flash Memories Through Non-binary Error Correction Coding," *DATE Workshop on Software Approaches to Resilient System Design*, Grenoble, France, Mar. 2013.
- L. Dolecek, C. Huang, and S. M. S. Tabatabaei Yazdi, "Analysis of iterative decoders under processing errors," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2013.
- S. Tabatabaei Yazdi and L. Dolecek, "Synchronization from Deletions Through Interactive Communication," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, 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*, Monticello, IL, Oct. 2012.
- L. Dolecek, "Coding-Theoretic Strategies for the Emerging Storage Systems," *Princeton University*, Princeton, NJ, Feb. 2012.
- S. M. S. Tabatabaei Yazdi and L. Dolecek, "LDPC Decoders on Unreliable Hardware: Fundamental Limits and Practical Implications," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, 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*, UC San Diego, La Jolla, CA, Feb. 2012.
- L. Dolecek, "Flexible Coding Schemes With Applications to Emerging Memory Technologies," *American Mathematical Society (AMS) Annual Meeting*, Boston, MA, 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*, Monticello, IL, Oct. 2011.
- L. Dolecek, "Flexible Coding Schemes With Applications to Emerging Memory Technologies," *Aspects of Coding Theory Workshop, EPFL*, Lausanne, Switzerland, Jun. 2011.
- L. Dolecek, "Coding Methods for Emerging Non-Volatile Memories," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2011.
- L. Dolecek, "Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits," *JPL-NASA*, Pasadena, CA May 2010.
- L. Dolecek, "Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits," *Cornell University*, NY, NY, Apr. 2010.
- L. Dolecek, "Using Structural Properties of Rare Events for Better System Design: Examples From Codes and Circuits," *Communications, Networks and Systems Seminar, University of Southern California*, Los Angeles, CA, Apr. 2010.
- L. Dolecek, "On Absorbing Sets of Structured Sparse Graph codes," *Information Theory and Applications Workshop*, UC San Diego, La Jolla, CA, Feb. 2010.

INDUSTRIAL EXPERIENCE

Consultant for law firms, 2015-present

- Provided expert advice on various memory and communications technologies.

Consultant for a distributed data storage start-up, 2016-2018

- 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

- National Science Foundations (NSF), BSF-CCF-CIF program. Grant title: "Reliable Data Storage on Sampling Channels," 2023-2026. PI: L. Dolecek
- National Science Foundations (NSF) Grant title: "Collaborative Research: CIF: Small: Versatile Data Synchronization: Novel Codes and Algorithms for Practical Applications," 2023-2026. PI: L. Dolecek
- Amazon, Faculty Research Gift, 2022 - present. PI: L. Dolecek
- National Science Foundations (NSF) Grant title: "QuIC-TAQS: A high-dimensional multi-access scalable testbed for the interconnected quantum network," 2021-2025. PI: C. W. Wong, co-PIs: L. Bouchard, L. Dolecek, G. Smith, and A. Faraon.
- National Science Foundation (NSF), CCF-CIF program. Grant title: "FET: Small: Towards full photon utilization by adaptive modulation and coding on quantum links," 2020-2022. PI: L. Dolecek, Co-PI: C. W. Wong.
- SanDisk Corp., Grant title: "Binary Spatially Coupled Codes for Flash Memories," 2017-2019. PI: L. Dolecek.
- National Science Foundation (NSF), BSF-CCF-CIF program. Grant title: "Coding for Fast Storage Access and In-Memory Computing," 2017-2020. PI: L. Dolecek.
- 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,” 2014-2017. UCLA PI: L. Dolecek.
- Grant from Micron Technologies to support research in CODESS Center, 2014-2018. 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,” 2012-2018. 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 - Theory, Practice, and Extensions,” 2012-2016. L. Dolecek is UCLA PI, other PIs: D. Costello, T. Fuja, J. Kliever, 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,” 2012-2016. 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,” 2011-2018. 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 Graduate Students

- Sonali Madiseti (MS), ECE Department, UCLA 2024-present.
- Michael Ni (MS), ECE Department, UCLA 2024-present.
- Lev Taz (PhD), ECE Department, UCLA, 2020-present. Winner of the 2019 Preliminary Exam Award in Signals and Systems, ECE Department, UCLA.

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

- Debarab Mitra (PhD) , ECE Department, UCLA, PhD, 2023. Dissertation title: "Channel Coding Techniques for Scaling Modern Data-Driven Applications: From Blockchain Systems to Quantum Communications".
 - Next: Senior Engineer, Qualcomm
- Siyi Yang (PhD), ECE Department, UCLA, PhD, 2021. Dissertation title: "Application-Driven Coding Techniques: From Cloud Storage to Quantum Communications"
 - Qualcomm Innovation Fellowship Finalist.
 - Next: Postdoctoral Researcher, Duke University
- Zehui Chen (PhD), ECE Department, UCLA, PhD, 2021. Dissertation title: "Coding Assisted Methods for Crossbar Resistive Memory."
 - Qualcomm Innovation Fellowship Finalist.
 - Next: Senior Engineer, Huawei
- Homa Esfahanizadeh, ECE Department, UCLA, PhD, 2019. Dissertation title: "Spatially-Coupled Codes for Modern Data Storage Systems."
 - Next: Post-doctoral researcher at the Massachusetts Institute of Technology (MIT).
- Ahmed Hareedy, ECE Department, UCLA, PhD, 2018. Dissertation title: "Graph-Based Error Correcting Codes for Modern Dense Storage Devices."
 - Winner of 2016-2017 ECE Department Excellence in Teaching Award. Winner of 2017-2018 UCLA Dissertation Year Fellowship. Winner of 2016-2017 Outstanding Dissertation Award in Signals and Systems, ECE Department, UCLA.
 - Next: post-doctoral researcher at Duke University. Now: Tenure-Track Assistant Professor at METU, Turkey.
- Clayton Schoeny, ECE Department, PhD, 2018. Dissertation title: "Coding for Large-Scale Data Systems."
 - Winner of 2016-2017 ECE Department Excellence in Teaching Award. Winner of 2017-2018 UCLA Dissertation Year Fellowship. Winner of 2016-2017 Qualcomm Innovation Fellowship. Winner of 2016-2017 Outstanding Dissertation Award in Signals and Systems, ECE Department, UCLA.
 - Next: joined Fair as a Senior Data Scientist.
- Frederic Sala, ECE Department, UCLA, PhD, 2016. Dissertation title: "Algorithms and Coding Techniques for Reliable Data Management and Storage."

- Winner of 2015-2016 UCLA Dissertation Year Fellowship. Winner of 2016-2017 Outstanding Dissertation Award in Signals and Systems, ECE Department, UCLA.
- Next: post-doctoral researcher at Stanford University, then Assistant Professor at the University of Wisconsin.
- Behzad Amiri, EE Department, UCLA, PhD, 2015. Dissertation title: “Theory and Practice of Non-Binary Graph Based Codes: A Combinatorial View.”
 - Next: 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 Research Associate Professor at UC San Diego.
- Chu-Hsiang Huang, EE Department, UCLA, PhD, 2015. Dissertation title: “Iterative Information Processing on Unreliable Hardware: An Information Theoretic Approach.”
 - Next: Senior Engineer at Qualcomm. Now: Assistant Professor, ECE Department, NTU, Taiwan.
- 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

- Debarnab Mitra, ECE Department, UCLA, M.S., 2020. Best Masters Thesis in Signals and Systems, ECE Department, UCLA.
- Lev Tauz, ECE Department, UCLA, M.S., 2020.
- Siyi Yang, ECE Department, UCLA, M.S., 2018.
- Zehui Chen, ECE Department, UCLA, M.S., 2018.
- Shahroze Kabir, ECE Department, UCLA, M.S., 2017.
- Kayvon Mazooji, EE Department, UCLA, M.S., 2016.
- Amirhossein Reisizadeh, EE Department, UCLA, M.S., 2016.
- Chinnayi 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.
- 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

- Laura Conde-Cinencia (professor, University of South Brittany, France), EE Department, 2016.
- Jose Carmena (graduate student at INAOE, Mexico), EE Department, UCLA, 2017.

- 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

- Justin Shao, ECE Department, UCLA, 2020-2022.
- Alan Yao, ECE Department, UCLA, 2021-2022.
- Sumith Nalabolu, ECE Department, UCLA, 2021-2022.
- Megan Chen, ECE Department, UCLA, 2022-2022.
- Shyam Venkatasubramanian, ECE Department, UCLA, 2019-2021.
- Andrew Tan, EE Department, UCLA, 2017-2018.
- Jesse Wang, EE Department, UCLA, 2017-2018.
- Nian Guo, EE Department, UCLA, 2016-2017. Next: Caltech graduate program.
- Chi-Yo Tsai, EE Department, UCLA, 2015-2016.
- Manie Tadayon, EE Department, UCLA, 2014-2015. Next: UCLA graduate program.
- Jimmy Zhu, EE Department, UCLA, 2012-2013. Next: UCLA graduate program.
- Aaditya Ramesh, EE Department, UCLA, 2011-2012. Next: Cornell University graduate program.
- Jiajun Zhang, EE Department, UCLA, 2011-2012. Next: Northwestern University graduate program.
- Yun-Feng (Dennis) Lo, EE Department, UCLA, 2011.
- Babak Khouienia, EE Department, UCLA, 2011. Next: UCLA graduate program.
- Pamela Lee, EE Department, UC Berkeley, 2008. Next: 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, Feb. 2016.

Book Chapters

1. I. Alam, L. Dolecek, and P. Gupta, “Lightweight Software-Defined Error Correction for Memories,” in *Dependable Embedded Systems*, Eds. J. Henkel and N. Dutt, Springer, 2021.
2. F. Sala, C. Schoeny, and L. Dolecek, “Advanced Algebraic and Graph-Based ECC Schemes for Flash Memories,” *3-D Flash Memories*, Ed. Rino Micheloni, Springer, Aug. 2016.
3. 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. A. Bosio, L. Dolecek, A. Kourfali, S. Parameswaran, and A. Savino, “ Guest Editorial Special Issue: Approximation at the Edge,” *ACM Trans. Embed. Comput. Syst.* vol. 22(4), pp. 72:1-72:4, 2023.

2. A. Barg, L. Dolecek, R. Gabrys, Gyula O. H. Katona, J. Körner, A. McGregor, O. Milenkovic, S. Mesnager, G. Zémor, “Guest Editorial Special Issue: From Deletion-Correction to Graph Reconstruction: In Memory of Vladimir I. Levenshtein”, *IEEE Transactions on Information Theory* vol. 67(6), pp. 3187-3189, June 2021.
3. 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. D. Mitra, J. Shreekumar, L. Tauz, M. Can Sarihan, C. W. Wong, and L. Dolecek, ” Efficient information reconciliation in quantum key distribution systems using informed design of non-binary LDPC codes,” *Quantum Inf. Process.* vol. 23, no. 4, April 2024.
2. E. Dupraz, F. Leduc-Primeau, K. Cui, and L. Dolecek, “Turning to Information Theory to Bring in-Memory Computing into Practice,” *IEEE BITS Magazine*, vol. 3, no. 3, pp. 39-48, 1 Sept. 2023.
3. H. Esfahanizadeh, L. Tauz, and L. Dolecek, “Harnessing Degrees of Freedom of Spatially Coupled Graph Codes for Agile Data Storage,” *IEEE BITS Magazine*, vol. 3, no. 3, pp. 39-48, 1 Sept. 2023.
4. L. Dolecek and E. Soljanin, “QKD Based on Time-Entangled Photons and its Key-Rate Promise,” *IEEE BITS Magazine*, vol. 2, no. 3, pp. 39-48, 1 Dec. 2022.
5. D. Mitra, L. Tauz, and L. Dolecek, “Graph Coded Merkle Tree: Mitigating Data Availability Attacks in Blockchain Systems Using Informed Design of Polar Factor Graphs,” *IEEE Journal on Sel. Areas in Info. Theory*, to appear, 2023.
6. H. Esfahanizadeh, E. Ram, Y. Cassuto, and L. Dolecek, “A Unified, SNR-Aware SC-LDPC Code Design With Applications to Magnetic Recording,” *IEEE Transactions on Magnetics*, vol. 53 (3), pp. 3000529, March 2023.
7. S. Yang, A. H. Hareedy, A. R. Calderbank, and L. Dolecek, “Breaking the Computational Bottleneck: Probabilistic Optimization of High-Memory Spatially-Coupled Codes,” *IEEE Transactions on Information Theory*, vol. 69 (2), pp. 886 - 909, Feb. 2023.
8. D. Mitra, L. Tauz, L. Dolecek, “Overcoming Data Availability Attacks in Blockchain Systems: LDPC Code Design for Coded Merkle Tree,” in *IEEE Transactions on Communications*, vol. 70 (9), pp. 5742 - 5759, Sept. 2022.
9. L. Tauz and L. Dolecek, ”Variable Coded Batch Matrix Multiplication,” in *IEEE Journal on Selected Areas in Information Theory*, vol. 3(2), pp. 306 - 320, Sept. 2022.
10. S. Yang, A. Hareedy, A. R. Calderbank, and L. Dolecek, “Hierarchical Coding for Cloud Storage: Topology-Adaptivity, Scalability, and Flexibility,” *IEEE Transactions on Information Theory*, vol. 68 (6), pp. 3657 – 3680, June 2022.
11. P. Stanley-Marbell, A. Alaghi, M. Carbin, E. Darulova, L. Dolecek, A. Gerstlauer, G. Gillani, D. Jevdjic, T. Moreau, M. Cacciotti, A. Daglis, N. Enright Jerger, B. Falsafi, S. Misailovic, A. Sampson, D. Zufferey, “Exploiting Errors for Efficiency: A Survey from Circuits to Applications,” *ACM Computing Surveys*, vol. 53 (3), no. 3, pp. 1-39, March 2021.
12. A. Hareedy, R. Wu, and L. Dolecek, “A Channel-Aware Combinatorial Approach to Design High Performance Spatially-Coupled Codes for Magnetic Recording Systems,” *IEEE Transactions on Information Theory*, vol. 66 (8), pp. 4834- 4852, Aug. 2020.
13. H. Esfahanizadeh, L. Tauz, and L. Dolecek, “Multi-Dimensional Spatially-Coupled Code Design: Enhancing the Cycle Properties,” *IEEE Transactions on Communications*, vol. 68 (5), pp. 2653 – 2666, May 2020.

14. Z. Chen, C. Schoeny, L. Dolecek, "Pilot Assisted Adaptive Thresholding for Sneak-Path Mitigation in Resistive Memories With Failed Selection Devices," *IEEE Transactions on Communications*, vol. 68(1), pp. 66-81, Jan. 2020.
15. C. Schoeny, F. Sala, M. Gottscho, I. Alam, P. Gupta, and L. Dolecek, "Context-Aware Resiliency: Unequal Message Protection for Random-Access Memories," *IEEE Transactions on Information Theory*, vol. 65 (10), pp. 6146 – 6159, Oct. 2019.
16. S. Yang, C. Schoeny, and L. Dolecek, "Theoretical Bounds and Constructions of Codes in the Generalized Cayley Metric," *IEEE Transactions on Information Theory*, vol. 65 (8), pp. 4746 – 4763, Aug. 2019.
17. A. 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 Transactions on Information Theory*, vol. 65 (4), pp. 2128 – 2154, Apr. 2019. **2018-2019 Best Student Paper Award IEEE Data Storage Society.**
18. H. Esfahanizadeh, A. Hareedy, and L. Dolecek, "Finite-Length Construction of High Performance Spatially-Coupled Codes via Optimized Partitioning and Lifting," *IEEE Transactions on Communications*, vol. 67(1), pp. 3-16, Jan. 2019.
19. Z. Chen, C. Schoeny, and L. Dolecek, "Hamming Distance Computation in Unreliable Resistive Memory," *IEEE Transactions on Communications*, vol. 66 (11), pp. 5013 – 5027, Nov. 2018.
20. S. S. Garani, L. Dolecek, J. Barry, F. Sala, and B. Vasic, "Signal Processing and Coding Techniques for 2-D Magnetic Recording: An Overview," *Proceedings of the IEEE*, vol. 106 (9), pp. 286-318, Feb. 2018.
21. M. Gottscho, I. Alam, C. Schoeny, L. Dolecek, P. Gupta, "Low-Cost Memory Fault Tolerance for IoT Devices," *ACM Transactions on Embedded Computing Systems*, vol. 16 (5), pp. 1-25, Nov. 2017. **Best Paper Award at the ACM/IEEE Int. Conference on Compilers, Architecture, and System Synthesis (CASES).**
22. 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.
23. F. Sala, R. Gabrys, C. Schoeny, and L. Dolecek, "Exact Reconstruction from Insertions in Synchronization Codes," *IEEE Transactions on Information Theory*, vol. 63 (4), pp. 2428 – 2445, Apr. 2017.
24. 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*, vol. 65 (4), pp. 1438 – 1450, Apr. 2017.
25. 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.
26. 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) N Special Issue on Data Storage*, vol. 34 (9), pp. 2402 – 2415, Sep. 2016.
27. B. Amiri, A. Reisizadeh, 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.
28. 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.

29. 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, Jun. 2016.
30. 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.
31. 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, Dec. 2015.
32. 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.
33. 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.
34. 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.**
35. 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.
36. 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.
37. 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.
38. R. Gabrys, F. Sala, and L. Dolecek, "Coding for Unreliable Flash Memory Cells," *IEEE Communication Letters*, vol. 18 (9), pp. 1491 – 1494, Jul. 2014.
39. 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.
40. D. J. Costello, Jr., L. Dolecek, T. E. Fuja, J. Kliewer, D. G. M. Mitchell, and R. Smarandache, "Spatially Coupled Sparse Codes on Graphs - Theory and Practice," *IEEE Communications Magazine*, vol. 52 (7), pp. 168 – 176, Jun. 2014.
41. B. Amiri, J. Kliewer, and L. Dolecek, "Analysis and Enumeration of Absorbing Sets for Non-Binary Graph-Based Codes," *IEEE Transactions on Communications*, vol. 62 (2), pp. 398 – 409, Feb. 2014.
42. 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.
43. 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.
44. 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.
45. 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.

46. 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.
47. 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.
48. 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.
49. 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.
50. 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. Sylvester, "Underdesigned and Opportunistic Computing in Presence of Hardware Variability," *IEEE Transactions on CAD*, vol. 32 (1), pp. 8 – 23, Jan. 2013.
51. 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.
52. F. Penna, Y. Sun, L. Dolecek, and D. Cabric, "Detecting and Counteracting Statistical Attacks in Cooperative Spectrum Sensing," *IEEE Transactions on Signal Processing*, vol. 60 (4), pp. 1806 – 1822, Apr. 2012.
53. 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.
54. 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.
55. 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.
56. 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, Aug. 2009.
57. 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, Apr. 2007.

Refereed and Invited Conference Publications

1. L. Tauz and L. Dolecek, "Novel Update Model with Improved Write Rates for Coded Data Storage," accepted to Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Asilomar, CA, Nov. 2024.
2. L. Tauz, D. Mitra, J. Shreekumar, M. Can Sarihan, C. W. Wong, and L. Dolecek, "Block-MDS QC-LDPC Codes with Application to Quantum Key Distribution," accepted in Proc. *IEEE Information Theory Workshop*, Shenzhen, China, Nov. 2024.
3. L. Tauz and L. Dolecek, "Fully Private Grouped Matrix Multiplication with Colluding Workers," Proc. *IEEE International Symposium on Information Theory (ISIT)*, Taipei, Taiwan, June 2023.
4. D. Mitra, L. Tauz, and L. Dolecek, "Polar Coded Merkle Tree: Improved Detection of Data Availability Attacks in Blockchain Systems," *IEEE International Symposium on Information Theory (ISIT)*, Espoo, Finland, June 2022. **Finalist for the Memorable Paper Award at NVMW 2023.**
5. L. Tauz and L. Dolecek, "Variable Coded Batch Matrix Multiplication," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Madrid, Spain, Dec. 2021.
6. Z. Chen and L. Dolecek, "Coding Schemes for Crossbar Resistive Memory with High Line Resistance in SCM Applications," in Proc. *IEEE International Symposium on Topics in Coding*, Montreal, Canada, August 2021. (invited)
7. S. Yang, A. Hareedy, S. Venkatasubramanian, A. R. Calderbank, and L. Dolecek, "GRADE-AO: Towards Near-Optimal Spatially-Coupled Codes With High Memories," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Melbourne, Australia, July 2021.
8. D. Mitra, L. Tauz, and L. Dolecek, "Communication-Efficient LDPC Code Design for Data Availability Oracle in Side Blockchains," in Proc. *IEEE Information Theory Workshop (ITW)*, Kanazawa, Japan, October 2021. **Runner Up for the Memorable Paper Award at NVMW 2022.**
9. A. Chen and L. Dolecek, "Write and Read Channel Models for 1S1R Crossbar Resistive Memory with High Line Resistance," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Taipei, Taiwan, Dec. 2020.
10. D. Mitra, L. Tauz, and L. Dolecek, "Concentrated Stopping Set Design for Coded Merkle Tree: Improving Security Against Data Availability Attacks in Blockchain Systems," in Proc. *IEEE Information Theory Workshop (ITW)*, Riva del Garda, Italy, Aug. 2020 (held in 2021).
11. G. Jovanovic and L. Dolecek, "Improving Aliasing Rejection by Inserting Additional Zeros into Folding Bands Using Simple Filters," 24th European Conference on Circuit Theory and Design, Sofia, Bulgaria, Sept. 2020.
12. S. Yang, A. Hareedy, R. Calderbank, and L. Dolecek, "Topology-Aware Cooperative Data Protection in Blockchain-Based Decentralized Storage Networks," Proc. *IEEE International Symposium on Information Theory (ISIT)*, Los Angeles, CA, Jun. 2020. **Runner Up for the Memorable Paper Award at NVMW 2021.**
13. H. Esfahanizadeh, E. Ram, Y. Cassuto, and L. Dolecek, "Spatially Coupled Codes with Sub-Block Locality: Joint Finite Length-Asymptotic Design Approach," Proc. *IEEE International Symposium on Information Theory (ISIT)*, Los Angeles, CA, Jun. 2020.
14. L. Tauz, H. Esfahanizadeh, and L. Dolecek, "Non-Uniform Window Decoding for Multi-Dimensional Spatially-Coupled LDPC Codes," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Los Angeles, CA, Jun. 2020. **Winner of the Memorable Paper Award at NVMW 2021.**
15. S. Yang, A. Hareedy, R. Calderbank, and L. Dolecek, "Hierarchical coding to enable scalability and flexibility in heterogeneous cloud storage," *IEEE GLOBECOM*, Waikoloa, HI, USA, Dec. 2019.

16. S. Yang, M. Can Sarihan, K.-C. Chang, C.W. Wong, and L. Dolecek, "Efficient Information Reconciliation for Energy-Time Entanglement Quantum Key Distribution," *Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2019.
17. D. Mitra and L. Dolecek, "Patterned Erasure Correcting Codes for Low Storage-Overhead Blockchain Systems," *Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2019.
18. L. Tauz, L. Dolecek, "Multi-Message Gradient Coding for Utilizing Non-Persistent Stragglers," *Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2019.
19. H. Esfahanizadeh, R. Wu, and L. Dolecek, "A Finite-Length Construction of Irregular Spatially-Coupled Codes," in Proc. *IEEE Information Theory Workshop (ITW)*, Visby, Sweden, Aug. 2019. (invited)
20. M. Abroshan, R. Venkataramanan, L. Dolecek, and A. Guillen i Fabregas, "Coding for Deletion Channels with Multiple Traces," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Paris, France, Jul. 2019.
21. H. Esfahanizadeh, A. Hareedy, L. Dolecek, "Multi-Dimensional Spatially-Coupled Code Design Through Informed Relocation of Circulants," in Proc. *57th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2019. **Runner up for Memorable Paper Award at NVMW 2019.**
22. L. Conde-Canencia, T. Condie, and L. Dolecek, "Data Deduplication with Edit Errors," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Abu Dhabi, Dec. 2018.
23. A. Hareedy, H. Esfahanizadeh, A. Tan, and L. Dolecek, "Spatially-Coupled Code Design for Partial-Response Channels: Optimal Object-Minimization Approach," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Abu Dhabi, Dec. 2018.
24. S. Jiang, C. Schoeny, and L. Dolecek, "An Interactive Algorithm for Synchronizing from Burst Deletions," in Proc. *IEEE International Symposium on Turbo Coding and Iterative Information Processing*, Hong Kong, Hong Kong, Dec. 2018.
25. Z. Chen, C. Schoeny, and L. Dolecek, "Coding Assisted Adaptive Thresholding for Sneak-Path Mitigation in Resistive Memories," in Proc. *IEEE Information Theory Workshop (ITW)*, Guangzhou, China, Nov. 2018. **Runner up for Memorable Paper Award at NVMW 2019.**
26. C. Schoeny, I. Alam, M. Gottscho, P. Gupta, and L. Dolecek, "Error Correction and Detection for Computing Memories Using System Side Information," in Proc. *IEEE Information Theory Workshop (ITW)*, Guangzhou, China, Nov. 2018. (invited)
27. L. Conde-Canencia and L. Dolecek, "Nanopore DNA Sequencing Channel Modeling," in Proc. *IEEE Workshop on Signal Processing Systems (SiPS)*, Cape Town, South Africa, Oct. 2018.
28. L. Dolecek, J. Lee, and J. Cheung, "Unveiling Intrinsic Locality Properties of Reed-Solomon Codes with Applications to Distributed Storage," in Proc. *IEEE International Conference on Communications (ICC)*, Kansas City, MS May 2018.
29. I. Alam, C. Schoeny, L. Dolecek, and P. Gupta, "Parity++: Lightweight Error Correction for Last Level Caches," Workshop on Silicon Errors in Logic System Effects (SELSE), March 2018. **Best of SELSE; also presented by invitation at DSN 2018.**
30. Z. Chen, C. Schoney, Y. Cassuto, and L. Dolecek, "Coding Scheme for Reliable In-Memory Hamming Distance Computation," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Asilomar, CA, Nov. 2017.
31. A. Hareedy, H. Esfahanizadeh, and L. Dolecek, "High performance spatially coupled codes for flash memories," in Proc. *IEEE Information Theory Workshop (ITW)*, Kaohsiung, Taiwan, Nov. 2017. **Winner of the Memorable Paper Award at NVMW 2018.**

32. S. Yang, C. Schoeny, and L. Dolecek, "Order-optimal permutation codes in the generalized Cayley metric," in Proc. *IEEE Information Theory Workshop (ITW)*, Kaohsiung, Taiwan, Nov. 2017. **Runner up for Memorable Paper Award at NVMW 2018.**
33. F. Sala, C. Schoeny, and L. Dolecek, "Faster Reconstruction Through Coding for DNA Storage," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Asilomar, CA, Nov. 2017. (invited)
34. C. Schoeny, F. Sala, M. Gottcho, I. Aram, P. Gupta, and L. Dolecek, "Context-Aware Resiliency: Unequal Message Protection for Memory Applications," in Proc. *IEEE Information Theory Workshop (ITW)*, Kaohsiung, Taiwan, Nov. 2017. (invited)
35. S. Kabir, F. Sala, G. Van Den Broeck, "Coded Machine Learning: joint informed replication and learning for linear regression," in Proc. *55th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2017.
36. M. Gottscho, I. Alam, C. Schoeny, L. Dolecek and P. Gupta, "Low-Cost Memory Fault Tolerance for IoT Devices," in Proc. *Embedded Systems Week – CASES*, Seoul, Korea, Oct. 2017. **Best paper award at CASES.**
37. 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.
38. 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)
39. 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.
40. K. Mazooji, F. Sala, G. van Den Broeck, and L. Dolecek, "Robust Channel Coding Strategies for Machine Learning Data," in Proc. *54th Allerton Conference on Communication, Control, and Computing*, Monticello, IL, Oct. 2016. (invited)
41. L. Dolecek, "Coding Theory for Robust Computing: Models, Tools, Applications," in Proc. *IEEE International Symposium on Turbo Coding and Iterative Information Processing*, Brest, France, Sep. 2016 (invited).
42. 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, Sep. 2016.
43. 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)
44. 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, Jul. 2016.
45. 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, Jul. 2016.
46. M. Gottscho, C. Schoeny, L. Dolecek and P. Gupta, "Software Defined Error-Correcting Codes," *Workshop on Silicon Errors in Logic System Effects (SELSE)*, Mar. 2016. **Best of SELSE & presented by invitation at DSN 2016.**
47. 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)*, Mar. 2016, **Best of SELSE & presented by invitation at DSN 2016.**

48. 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, Mar. 2016.
49. 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.**
50. F. Sala, C. Schoeny, 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)
51. 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, Jun. 2015.
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54. 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, Jun. 2015.
55. B. Amiri, A. Reisizadeh, J. Kliwer, 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, Jun. 2015.
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58. 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.
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60. 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.
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62. F. Sala, R. Gabrys, and L. Dolecek, "Deletions in Multipermutations," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Honolulu, HI, Jul. 2014.
63. 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, Jul. 2014.
64. 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, Jul. 2014.

65. N. Bitouze, F. Sala, S. M. S. Tabatabaei, and L. Dolecek, "A practical framework for efficient file synchronization," in Proc. *IEEE 51st Allerton Conference on Communication, Control, and Computing*, Moticello, IL, Oct. 2013. (invited)
66. Y. Li and L. Dolecek, "Effects of Approximate Representation in Belief Propagation for Inference in Wireless Sensor Networks," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
67. X. Wu, H. Chang, C.-H. Huang, Y. Wang, L. Dolecek, and G. Pottie, "Virtual Inertial Measurements for Motion Inference in Wireless Health," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
68. M. Laghate, C.H. Huang, C.-K. Yu, L. Dolecek, and D. Cabric, "Identifying Statistical Mimicry Attacks in Distributed Spectrum Sensing," in Proc. *IEEE Asilomar Conference on Signals, Systems and Computers*, Monterey, CA, Nov. 2013.
69. F. Sala and L. Dolecek, "Constrained Rank Modulation," in Proc. *IEEE Information Theory Workshop (ITW)*, Sevilla, Spain, Sep. 2013.
70. S. Chakraborty, N. Bitouze, M. Srivastava, and L. Dolecek, "Protecting Data Against Unwanted Inferences," in Proc. *IEEE Information Theory Workshop (ITW)*, Sevilla, Spain, Sep. 2013.
71. 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, Jul. 2013.
72. F. Sala and L. Dolecek, "Counting Sequences Obtained from the Synchronization Channel," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, Jul. 2013.
73. R. Gabrys, E. Yaakobi, and L. Dolecek, "Correcting Grain Errors in Magnetic Media," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Istanbul, Turkey, Jul. 2013.
74. 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, Jul. 2013.
75. 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, Jul. 2013.
76. 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.
77. 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.
78. 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.
79. 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, Sep. 2012.
80. 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, Aug. 2012.
81. 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, Jul. 2012.

82. 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, Jul. 2012.
83. 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, Jun. 2012.
84. 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, Mar. 2012.
85. 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.
86. 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)
87. 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.
88. 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.
89. 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.
90. 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.
91. 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.
92. 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.
93. 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.
94. 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, Jul. - Aug. 2011.
95. 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, Jul. - Aug. 2011.
96. 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, Jul. - Aug. 2011.
97. 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, Jun. 2011.

98. 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.
99. 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)
100. 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.
101. L. Dolecek, "Towards Longer Lifetime of Emerging Memory Technologies Using Number Theory," in Proc. *IEEE Global Communications Conference (GLOBECOM)*, Miami, FL, Dec. 2010.
102. 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, Sep. 2010.
103. 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)
104. G. Jovanovic and L. Dolecek, "Novel Multiplierless Wide-band CIC Compensator," in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, Paris, France, May – Jun. 2010.
105. 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, Mar. 2010.
106. Z. Zhang, L. Dolecek, P. Lee, V. Anantharam, M. J. Wainwright, B. Richards, and B. Nikolic, "Low error rate LDPC decoders," in Proc. *IEEE Asilomar Conference on Signals, Systems, and Computers*, Monterey, CA, Nov. 2009.
107. 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, Jun.-Jul. 2009.
108. Z. Zhang, L. Dolecek, B. Nikolic, V. Anantharam, and M. J. Wainwright, "Lowering LDPC Error Floors by Postprocessing," in Proc. *IEEE Global Telecommunications Conference (GLOBECOM)*, New Orleans, LA, Nov. 2008.
109. 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.
110. L. Dolecek and D. Shah, "Social Networks With(out) Influential Agents," in Proc. *Third Congress of the Game Theory Society (GAMES 2008)*, Evanston, IL, Jul. 2008.
111. 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, Jul. 2008.
112. L. Dolecek and V. Anantharam, "Prefixing Method for Correcting Repetition Errors," in Proc. *IEEE International Symposium on Information Theory (ISIT)*, Toronto, Canada, Jul. 2008.
113. L. Dolecek, Z. Zhang, M. J. Wainwright, V. Anantharam, and 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, Sep. 2007.
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117. 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.
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Refereed Workshop Articles (without proceedings)

1. D. Mitra, L. Tauz, and L. Dolecek, "Concentrated Stopping Set Design for Coded Merkle Tree: Improving Security Against Data Availability Attacks in Blockchain Systems," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, May 2022.
2. S. Yang, A. Hareedy, A. R. Calderbank, and L. Dolecek, "Cooperative Data Protection for Topology-Aware Decentralized Storage Networks," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2021.
3. L. Tauz, H. Esfahanizadeh, and L. Dolecek, "Non-Uniform Windowed Decoding For Multi-Dimensional Spatially-Coupled LDPC Codes," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2021.
4. L. Tauz and L. Dolecek, "Multi-Message Gradient Coding for Utilization of Non-Persistent Stragglers," *CodML Workshop, International Conference on Machine Learning*, Long Beach, CA, Jun. 2019.
5. F. Sala, S. Kabir, G. van Den Broeck, and L. Dolecek, "Don't Fear the Bit Flips: Optimized Coding Strategies for Binary Classification", *Workshop on Robust Machine Learning in the Wild*, Melbourne, Australia, Aug. 2017.
6. 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)*, UC San Diego, La Jolla, CA, Mar. 2017.
7. A. Hareedy, C. Lanka, and L. Dolecek, "Non-Binary LDPC Code Optimization for Modern Storage Systems," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2017.
8. 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, Apr. 2016.
9. 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)*, UC San Diego, La Jolla, CA, Mar. 2016.

10. 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)*, UC San Diego, La Jolla, CA, Mar. 2016.
11. 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, Jun. 2015.
12. 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)*, UC San Diego, La Jolla, CA, Mar. 2015.
13. R. Gabrys and L. Dolecek, "Coding for Unreliable Memory Cells in TLC Flash," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2014.
14. F. Sala, R. Gabrys, and L. Dolecek, "Constrained Rank Modulation for Flash Memories," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2014.
15. F. Sala, R. Gabrys, and L. Dolecek, "Dynamic Threshold Schemes for Multi-Level Nonvolatile Memories," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2013.
16. 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)*, UC San Diego, La Jolla, CA, Mar. 2012.
17. R. Gabrys and L. Dolecek, "Coding Schemes and Information Theoretic Bounds for Generalized Write Once Memories," *Non-Volatile Memories Workshop (NVMW)*, UC San Diego, La Jolla, CA, Mar. 2012.