CURRICULUM VITAE

Roxana Smarandache

Education

2001: Ph.D.: Mathematics, University of Notre Dame.

1997: M.S.: Mathematics, University of Notre Dame.

1996: B.S.: Mathematics, University of Bucharest, Romania.

Appointments

2017 - now	Professor, University of Notre Dame, Dept. of Mathematics and Dept. of Electrical Engineering.
2014 - 2015	Sabbatical: Invited Professor, Swiss Federal Institute of Technology, Lausanne (EPFL), Switzerland.
2012 - 2017	Associate Professor, University of Notre Dame, Dept. of Mathematics and Dept. of Electrical Engineering.
2008 - 2009	Sabbatical: "Institut für Mathematik" at the University of Zürich, and in the "Forschungsinstitut für Mathematik" of ETH Zürich, Switzerland (8 months), and in the Mathematics Dept. of the University of Notre Dame (4 months).
2007 - 2012	Associate Professor, San Diego State University, Dept. of Mathematics and Statistics.
2005 - 2006	Leave: Visiting Assistant Professor, University of Notre Dame, Dept. of Mathematics.
2001 - 2007	Assistant Professor, San Diego State University, Dept. of Mathematics and Statistics.
1999 - 2000	Visiting Student: Swiss Federal Institute of Technology, Lausanne, Switzerland (EPFL), Department of Communication Systems.
1997 - 2001	Teaching Assistant, University of Notre Dame, Dept. of Mathematics.

Scholarships and Fellowships

1998-2000	Fellowship of the Center for Applied Mathematics, University of Notre Dame.

Honors, Distinctions, and Awards

2014	Elevated to Senior Member of the Institute for Electrical and Electronics Engineers (IEEE).
2007	Award for most influential teacher, SDSU.
1997	Richard Sady Graduate Student Award, University of Notre Dame.

Refereed Journal Publications

[1] Shiyuan Mo, Li Chen, Daniel J. Costello, David G. M. Mitchell and Roxana Smarandache, "Designing protograph-based quasi-cyclic spatially coupled LDPC codes with large girth", to be submitted.

[2] D. Napp and R. Smarandache, "Constructing strongly-MDS convolutional codes with maximum distance profile", *Advances in Mathematics of Communications AMC*, Vol. 10, no. 2, pp. 275-290, 2016.

[3] D. G. M. Mitchell, R. Smarandache, and D. J. Costello, Jr., "Quasi-Cyclic LDPC Codes Based on Pre-lifted Protographs", *IEEE Trans. Inform. Theory*, Vol. 60 (10), pp. 5856-5874, 2014.

[4] 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, 2014.

[5] M. Haenggi and R. Smarandache, " Diversity Polynomials for the Analysis of Temporal Correlations in Wireless Networks", *IEEE Trans. on Wireless Comm.*, Vol. 12 (11), pp. 5940-5951, 2013.

[6] A. G. Dimakis, R. Smarandache, and P. O. Vontobel, "LDPC Codes for Compressed Sensing", in *IEEE Trans. Inform. Theory*, Vol. 58 (5), pp. 3093–3114, 2012.

[7] R. Smarandache and P. O. Vontobel, "Quasi-Cyclic LDPC Codes: Influence of Proto- and Tanner-Graph Structure on Minimum Hamming Distance Upper Bounds", *IEEE Trans. Inform. Theory*, Vol. 58 (2), pp. 585-607, 2012.

[8] V. Tomas, J. Rosenthal, and R. Smarandache, "Decoding of Convolutional Codes over the Erasure Channel", *IEEE Trans. Inform. Theory*, Vol. 58 (1), pp. 90-108, 2012.

[9] A. E. Pusane, R. Smarandache, P. O. Vontobel, and D. J. Costello, Jr., "Deriving Good LDPC Convolutional Codes from LDPC Block Codes", *IEEE Trans. Inform. Theory*, Vol. 57 (2), pp. 835-857, 2011.

[10] R. Smarandache, A. Pusane, P. O. Vontobel, and D. J. Costello, Jr., "Pseudo-Codeword Performance Analysis for LDPC Convolutional Codes", *IEEE Trans. Inform. Theory*, Vol. 55 (6), pp. 2577-2598, 2009.

[11] R. Hutchinson, R. Smarandache, and J. Trumpf, "Superregular Matrices and the Construction of Convolutional Codes having a Maximum Distance Profile", *Linear Algebra and Its Applications*, Vol. 428 (11-12), pp. 2585-2596, 2008.

[12] R. Smarandache and P. O. Vontobel, "Pseudo-codeword analysis of Tanner graphs from projective and Euclidean planes", *IEEE Trans. Inform. Theory*, Vol. 53 (7), pp. 2376–2393, 2007.

[13] R. Smarandache and M. Wauer, "Bounds on the pseudo-weight of minimal pseudo-codewords of projective geometry codes", *Contemporary Mathematics, Algebra and Its Applications*, Vol. 419, pp. 285–296, 2006.

[14] H. Glüsing-Lüerßen, J. Rosenthal, and R. Smarandache, "Strongly MDS convolutional codes", *IEEE Trans. Inform. Theory*, Vol. 52 (2), pp. 584–598, 2006.

[15] R. Hutchinson, J. Rosenthal, and R. Smarandache, "Convolutional codes with maximum distance profile", *Systems & Control Letters*, Vol. 54 (1), pp. 53-63, 2005.

[16] R. Smarandache, H. Glüsing-Lüerßen, and J. Rosenthal, "Constructions for MDS-convolutional codes", *IEEE Trans. Inform. Theory*, Vol. 47 (5), pp. 2045–2049, 2001.

[17] R. Smarandache, "Unit memory convolutional codes with maximum distance", *Codes, Systems and Graphical Models, the IMA Volumes in Mathematics and its Applications*, Vol. 123, pp. 381–396, 2001.

[18] J. Rosenthal and R. Smarandache, "Maximum distance separable convolutional codes", *Appl. Algebra Engrg. Comm. Comput.*, Vol. 10 (1), pp. 15–32, 1999.

Refereed Conference Publications

[19] Cunlu Zhou, David G. M. Mitchell and Roxana Smarandache, "Free Pseudodistance Growth Rates for Spatially Coupled LDPC Codes over the BEC", *IEEE Information Theory Workshop (ITW)*, Guangzhou, China, Nov. 2018, 5 pages.

[20] Li Chen, Shiyuan Mo, Daniel J. Costello, David G. M. Mitchell and Roxana Smarandache, "A protograph-based design of quasi-cyclic spatially coupled LDPC codes", *IEEE Int. Symp. Information Theory (ISIT)*, July 2017, pages: 1683 - 1687.

[21] R. Smarandache and M. Haenggi, "Bethe and M-Bethe Permanent Inequalities", *IEEE Global Communications Conference*, San Diego, California, Dec. 2015.

[22] R. Smarandache, "Pseudocodewords from Bethe Permanents", *IEEE Int. Symp. Information Theory*, Istanbul, Turkey, July 2013.

[23] D. G. M. Mitchell, R. Smarandache, and D. J. Costello, Jr., "Constructing Good QC-LDPC Codes by Pre-lifting Protographs", *IEEE Information Theory Workshop (ITW)*, Lausanne, Switzerland, Sep. 2012.

[24] D. G. M. Mitchell, R. Smarandache, and D. J. Costello, Jr., "Quasi-Cyclic LDPC Codes Based on Pre-Lifted Protographs", *IEEE Information Theory Workshop (ITW)*, Paraty, Brazil, Oct. 2011.

[25] R. Smarandache, D. G. M. Mitchell, and D. J. Costello, Jr., "Partially quasi-cyclic protograph-based LDPC codes", *IEEE Int. Conference on Communications (ICC)*, Kyoto, Japan, June 2011.

[26] D. G. M. Mitchell, R. Smarandache, M. Lentmaier, and D. J. Costello, Jr., "Quasi-cyclic asymptotically regular LDPC codes", *IEEE Information Theory Workshop (ITW)*, Dublin, Ireland, Aug.-Sep. 2010. Online at `http://arxiv.org/abs/1007.0404`.

[27] V. Tomas, J. Rosenthal, and R. Smarandache, "Reverse Maximum Distance Profile Convolutional Codes over the Erasure Channel", *19th Int. Symp. on Mathematical Theory of Networks and Systems*, Budapest, Hungary, July 2010.

[28] R. Smarandache, "On Minimal Pseudo-Codewords", *IEEE Int. Symp. Information Theory*, Austin, Texas, June 2010.

[29] A. E. Pusane, R. Smarandache, P. O. Vontobel, and D. J. Costello, Jr., "On the iterative decoding of LDPC convolutional codes", *18th IEEE Signal Processing and Communications Applications Conference*, Diyarbakir, Turkey, Apr. 2010.

[30] A. G. Dimakis, R. Smarandache, and P. O. Vontobel, "Channel coding LP decoding and compressed sensing LP decoding: further connections", *Int. Zurich Seminar on Communications*, Zurich, Switzerland, Mar. 2010.

[31] R. Smarandache and M. F. Flanagan, "Spectral Graph Analysis of Quasi-Cyclic Codes", *IEEE Global Communications Conference*, Honolulu, Hawaii, Dec. 2009.

[32] R. Smarandache and P. O. Vontobel, "Absdet-Pseudo-Codewords and Perm-Pseudo-Codewords: Definitions and Properties", *IEEE Int. Symp. Information Theory*, Seoul, South Korea, July 2009.

[33] V. Tomas, J. Rosenthal, and R. Smarandache, "Decoding of MDP convolutional codes over the erasure channel", *IEEE Int. Symp. Information Theory*, Seoul, South Korea, July 2009.

[34] A. E. Pusane, R. Smarandache, P. O. Vontobel, and D. J. Costello, Jr., "On deriving good LDPC convolutional codes from QC LDPC block codes", *IEEE Int. Symp. Information Theory*, Nice, France, June 2007.

[35] R. Smarandache, A. Pusane, D. J. Costello, Jr., and P. O. Vontobel, "Pseudo-codewords in LDPC convolutional codes", *IEEE Int. Symp. Information Theory*, Seattle, Washington, July 2006.

[36] P. O. Vontobel and R. Smarandache, "On minimal pseudo-codewords of Tanner graphs from projective planes", *43rd Allerton Conf. on Communications, Control, and Computing*, Monticello, Illinois, Oct. 2005.

[37] P. Vontobel, R. Smarandache, N. Kiyavash, J. Teutsch, and D. Vukobratović, "On the Minimal Pseudo-Codewords of Codes from Finite Geometries", *IEEE Int. Symp. Information Theory*, Adelaide, Australia, Sep. 2005.

[38] R. Smarandache and P. O. Vontobel, "On regular quasi-cyclic LDPC codes from binomials", *IEEE Int. Symp. Information Theory*, Chicago, Illinois, July 2004.

[39] M. Greferath, M. O'Sullivan, and R. Smarandache, "Construction of good LDPC codes using dilation matrices", *IEEE Int. Symp. Information Theory*, Chicago, Illinois, July 2004.

[40] H. Glüsing-Lüerßen, R. Hutchinson, J. Rosenthal, and R. Smarandache, "Convolutional Codes which are Maximum Distance Separable and which have a Maximum Distance Profile", *41st Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, Oct. 2003.

[41] M. O'Sullivan and R. Smarandache, "High-rate, short length, $(3, 3s)$-regular LDPC Codes of girth 6 and 8", *IEEE Int. Symp. Information Theory*, Yokohama, Japan, July 2003.

[42] M. O'Sullivan, M. Greferath, and R. Smarandache, "Construction of LDPC Codes from Affine Permutation Matrices", *40th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, Oct. 2002.

[43] M. O'Sullivan, M. Greferath, and R. Smarandache, "Analysis of Iterative Decoding Algorithms", *15th Int. Symp. on the Mathematical Theory of Networks and Systems*, Notre Dame, Indiana, Aug. 2002.

[44] R. Smarandache, H. Glüsing-Lüerßen, and J. Rosenthal, "Construction and Decoding of Strongly MDS Convolutional Codes", *15th Int. Symp. on the Mathematical Theory of Networks and Systems*, Notre Dame, Indiana, Aug. 2002.

[45] R. Smarandache, H. Glüsing-Lüerßen, and J. Rosenthal, "Strongly MDS Convolutional Codes with Maximal Decoding Capability", *IEEE Int. Symp. Information Theory*, Lausanne, Switzerland, July 2002.

[46] R. Smarandache and J. Rosenthal, "Construction Results for MDS-Convolutional Codes", *IEEE Int. Symp. Information Theory*, Sorrento, Italy, July 2000.

[47] J. Rosenthal and R. Smarandache, "On the dual of MDS convolutional codes", *36-th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, Oct. 1998.

[48] R. Smarandache and J. Rosenthal, "Convolutional code constructions resulting in maximal or near maximal free distance", *IEEE Int. Symp. Information Theory*, Boston, Massachusetts, July 1998.

[49] R. Smarandache, H. Glüsing-Lüerßen, and J. Rosenthal, "Generalized first order descriptions and canonical forms for convolutional codes", *13th Int. Symp. on Mathematical Theory of Networks and Systems*, Padova, Italy, July 1998.

[50] R. Smarandache and J. Rosenthal, "A state space approach for constructing MDS rate $1/n$ convolutional codes", *IEEE Information Theory Workshop*, Killarney, Ireland, June 1998.

[51] J. Rosenthal and R. Smarandache, "Construction of convolutional codes using methods from linear system theory", *35th Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, Oct. 1997.

Invited Talks and Professional Visits

1. "Non-binary Convolutional Codes with Good Distance Properties", Mathematical Coding Theory in Multimedia Streaming, The Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Canada, Oct, 12, 2015.

2. "On the permanent of certain large matrices or permanent problems with permanent solutions, University of Neuchatel, Department of Mathematics, Switzerland, Nov. 17, 2014.

3. "LDPC codes based on pre-lifted protograph" Information Theory and Applications (ITA) workshop, San Diego, Feb. 14, 2014.

4. 4th International Castle Meeting on Coding Theory and Applications, Palmela, Portugal, Sep. 15–18, 2014 (no talk).

5. "Pseudocodewords from permanents and Bethe permanents", American Mathematical Society, Louisville, Kentucky, Oct. 5, 2013.

6. "Preliftings to improve performance", Dagstuhl Seminar in Coding Theory, Germany, Aug. 25–30, 2013.

7. "Pseudocodewords from Bethe permanents", Information Theory and Applications (ITA) workshop, San Diego, Feb. 14, 2013.

8. Workshop on *Trends in Coding Theory*, Ascona, Switzerland, Oct. 28–Nov. 2, 2012 (no talk).

9. "Pseudocodewords from permanents", Dagstuhl Seminar in Coding Theory, Germany, Nov 13–18, 2011.

10. "Structural properties of quasi-cyclic -LDPC codes", Spring 2011 program on *Algebraic Geometry with a view towards applications*, Mittag-Leffler, Stockholm, Sweden, Jan. 15–June 15, 2011.

11. "Measurement matrices of compressed sensing in LP decoding", Information Theory and Applications Workshop, Jan. 31–Feb. 5, 2010, UCSD.

12. Workshop on *Applications of Matroid Theory and Combinatorial Optimization to Information and Coding Theory*, The Banff International Research Station for Mathematical Innovation and Discovery (BIRS), Banff, Canada, Aug. 2–7, 2009 (no talk).

13. "Absdet and Perm Codewords and Pseudo-Codewords", ENSEA, Universite de Cergy-Pontoise - CNRS, ETIS group, Paris, France, Mar. 3, 2009.

14. "Quasi-Cyclic LDPC Codes: Influence of Proto- and Tanner-Graph Structure on Minimum Hamming Distance Upper Bounds", EPFL, Lausanne, Switzerland, Dec. 4, 2008.

15. "Pseudo-codewords for LDPC Convolutional Codes", EE Department, Ulm, Germany, Oct. 27, 2008.

16. "Quasi-Cyclic LDPC Codes: Influence of Proto- and Tanner-Graph Structure on Minimum Hamming Distance Upper Bounds", Mathematics Department, University of Zurich, Switzerland, Oct. 23, 2008.

17. "Families of Unwrapped LDPC Convolutional Codes", poster, IEEE Communication Theory Workshop, Virgin Islands, May 12, 2008.

18. Coding Theory workshop, Mathematisches Forschungsinstitut Oberwolfach, Germany, Dec. 2–8, 2007, (no talk).

19. "Deriving Good LDPC Convolutional Codes from LDPC Block Codes, University of California at San Diego, Information Theory and Applications Seminar, June 12, 2007.

20. Institute for Mathematics and Applications Annual Program Year Workshop on Complexity, Coding, and Communications, Minneapolis, Minnesota, Apr. 15–22, 2007.

21. "Algebraic Analysis of the Performance of Low-Density Parity-Check Convolutional Codes", University of Arizona, Mathematics Department, Applied Mathematics Colloquium, Tucson, Arizona, Oct. 6, 2006.

22. "Expander graphs tutorial lectures in number theory", University of Notre Dame, Mathematics, Spring semester, 2006.

23. "Minimal Pseudo-codewords of Codes from Finite Geometries", American Mathematical Society National Meeting, Lincoln, Nebraska, Oct. 21–23, 2005.

24. "Quasi-cyclic LDPC codes", University of Zurich, Department of Mathematics, Switzerland, July 6, 2005.

25. "On Minimal Vectors of Codes from Finite Geometries", Conference on Algebra and its Applications, Ohio University Center of Ring Theory and its Applications, Department of Mathematics, Athens, Ohio, Mar. 22–26, 2005.

26. "On the Minimal Pseudo-Codewords of Codes from Finite Geometries", at the University of Arizona, ECE Department, in the Communication Theory Seminar, Tucson, Arizona, Feb. 18, 2005.

27. "Convolutional Codes and the Viterbi Algorithm Tutorials", 2004 Institute for Mathematics and Applications Summer Program for Graduate Students in Coding and Cryptography, June 8–27, 2004, University of Notre Dame.

28. "Quasi-cyclic LDPC Codes", American Mathematical Society, National Meeting, Athens, Ohio, Mar. 25–27, 2004.

29. "Strongly-MDS and MDP Convolutional Codes", University of Salamanca, Spain, Mar. 13–20, 2004.

30. "Convolutional Codes with Maximum Distance Profile", American Mathematical Society National Meeting, Boulder, Colorado, Oct. 3–5, 2003.

31. Visit, University of Notre Dame, Department of Mathematics, Aug. 4–11, 2003.

32. "Algebraic Convolutional Codes", tutorial lecture at the University of California at San Diego, Department of Mathematics, San Diego, California, Apr. 16, 2003.

33. "Algebraic Constructions of Convolutional Codes", University of California at San Diego, Center for Magnetic Recording Research, San Diego, California, Nov. 12, 2002.

34. "Algebraic Constructions of Convolutional Codes", Bell Laboratories, Mathematical Sciences Research Center, Mathematics of Communications Department, Murray Hill, New Jersey, Jan. 30, 2001.

35. "Convolutional Codes with Large Free Distance", University of Groningen, Department of Mathematics and Computing Science, Groningen, Netherlands, June 13, 2000.

36. "Constructions of MDS Convolutional Codes", Swiss Federal Institute of Technology, Lausanne (EPFL), Switzerland, Dec. 6, 2000.

37. "Algebraic Constructions of Convolutional Codes", University of Kaiserslautern, Department of Mathematics, Kaiserslautern, Germany, Oct. 18, 1999.

38. "Algebraic Constructions of Convolutional Codes", University Oldenburg, Department of Mathematics, Oldenburg, Germany, Oct. 13, 1999.

39. "Constructions of MDS convolutional codes", University of Illinois, Coordinated Science Laboratory, Urbana-Champaign, Apr. 19, 1999.

40. "$1/n$-MDS Convolutional Codes", University College Cork, Department of Mathematics, Cork, Ireland, June 18, 1998.

Grants

2013-2017	NSF Grant DMS-1313221, "The Mathematics of Pseudocodewords", PI, $150,000.
2012-2016	NSF Grant CIF-1252788, "Collaborative Research: Spatially Coupled Sparse Code on Graphs: Theory, Practice, and Extensions", PI $154,000, ($770,000 in total; with ND (EE), UCLA and New Mexico).
2008-2012	NSF Grant CCF-0830608, "Collaborative Research: New Directions in Graph-Based Code Design", PI, $150,000.
2007-2011	NSF Grant DMS-0708033, "Pseudo-Codeword Analysis and Design of Quasi-Cyclic and Convolutional Codes", PI, $120,000.

Synergistic Activities

- Editorial board of the:
  - IEEE Transactions in Information Theory (2014–2018).
  - Advances in Mathematics of Communications (2013–2014).
- Undergraduate reading course in coding: Chang Zhou, Jan. 2019
- Building bridges mentoring program: mentor to Miguel Hoch, first-year student with interest in majoring in math or engineering, 2018-2019.
- Undergraduate senior project: Hannah Porter, Glynn Family Honors Program, math major, 2015-2016.
- Undergraduate senior project: Katherine Sanders, Glynn Family Honors Program, Math and Electrical Engineering double major, 2016-2017.
- Undergraduate summer project: Hannah Porter, math major, summers 2014, 2015 (under NSF-DMS-1313221).
- Building bridges mentoring program: mentor to Taylor Murray, first-year student with interest in majoring in electrical engineering, 2015-2016.
- Building bridges mentoring program: mentor to Briana DeVore-McDonald, first-year student with interest in majoring in electrical engineering, 2013-2014.
- High school honors project: David Kim, Penn High, Fall 2015.
- Qualifying exam committee for Adrian Pacurar (math, 2016) and Lai Wei (electrical engineering, 2013).
- Ph.D. thesis defense committee for John Engbers (math, 2013) and Lai Wei (electrical engineering, 2014).
- Undergraduate advisor for math major sophomores, 2012-2014.
- Special Opportunities Search Committee 2012-2013 (math).

- Undergraduate committee, 2015-2019 (math).
- Postdoctoral search committee, 2013-2014 (math).
- Undergraduate committee, 2013-2014, 2015-2016 (electrical engineering).
- External examiner for the final Ph.D. oral examination of Ahmed Badr, University of Toronto, April 15, 2014.
- Evaluation letters for several promotions to Associate Professor,
- External reviewer for several European grant programs.
- NSF external reviewer, several years.
- NSF panelist on Information Theory and Coding.
- Organizer of American Mathematical Society Sectional Meetings in:
  - Bloomington, Indiana, April 4–6, 2008.
  - New Orleans, January 5–7, 2007.
  - San Diego, California, January 5–7, 2002.
- TPC member of
  - ISIT 2016, Barcelona, Spain, 2016.
  - ISIT 2014, Honolulu, Hawaii, 2014.
  - ITW 2010 Dublin IEEE Information Theory Workshop, Dublin, 2010.
  - 5th International Symposium on Turbo Codes & Related Topics, EPFL, Lausanne, 2008.
  - Institute for Mathematics and Applications Summer School in Coding and Cryptography, Univ. of Notre Dame, Indiana, 2004.
- Reviewer for several journals, transactions, and conferences in both mathematics and engineering: Linear Algebra and its Applications Journal, Applicable Algebra in Engineering, Communication and Computing Journal, Transactions on Information Theory, Proc. of IEEE Inter. Symp. on Inform. Theory, Proc. of IEEE International Communications Conference, Proc. of IEEE Globecom - Communications Theory.

Membership in Professional Societies

IEEE, IEEE Information Theory Society, IEEE Communications Society.

Student Advising at Notre Dame

Undergraduates:
- Dane Krzyskowski (Fall 2012),
- Hannah Porter, "Computing the permanent of a matrix" (2015-2016 and summers of 2014, 2015),
- Katherine Sanders, "Breaking the Code: An analysis of cryptography and its applications to

present society" (2016-2017) (Electrical Engineering and Mathematics double major). *Ph.D.:*
- Cunlu Zhou (since 2013),
- Derric Chien (Dec. 2015-2016).

Student Advising at SDSU

MA Students:
- Osvaldo Soto, "A Class of Equidistant Memory-Two Convolutional Codes" (2004),
- Desson Chriswan Ginting "Comparison between the Sequential Algorithm and the Viterbi Algorithm" (2004),
- Marcel Wauer, "LDPC Codes Based on Projective Geometry" (2005),
- Holly Bass, "Minimal Vectors in Linear Codes" (2006),
- Eric Gorenstein, "Cycles in LDPC Quasi-Cyclic Codes" (2007),
- Andrea Sholtes, "Cycles and Patterns in LDPC Codes" (2007),
- Benjamin Thorn, "Permutation-Block LDPC Codes: Influence of Tanner-graph Structure on Minimum Hamming Distance" (2010),
- Gibsen Gina (2011-2012),
- Robert Lazar (partially), "Deriving Pseduocodewords from Bethe Permanents" (2011-2012),
- Sarah Elghraoui (partially), "Pseudocodewords of LDPC Codes from the Permanent and Bethe Permanent" (2012),
- Raul Soto (partially), "Maximizing the Minimum Distance of Bipartite Graph Based Low-Density Parity-Check Codes from Two-Step Circulant Covers" (2012).

All theses are online at `http://sdsu-dspace.calstate.edu/handle/10211.10/188/search-filter?field=author`.

Undergraduates:
- Ryan Rosenbaum (2007),
- Donald Adams (2007),
- David Kyle (2012).

Courses Taught at Notre Dame

Spring 2019	EE 30363 Random Phenomena in Electrical Engineering
Fall 2018	MATH 30310 Undergraduate Coding Theory
Spring 2018	EE 30363 Random Phenomena in Electrical Engineering MATH 20580-04 Introduction to linear algebra and differential equations
Fall 2017	MATH 30310 Undergraduate Coding Theory
Spring 2017	EE 30363 Random Phenomena in Electrical Engineering
Spring 2016	EE 30363 Random Phenomena in Electrical Engineering MATH 10360-06 Calculus B
Fall 2015	MATH 30310 Undergraduate Coding Theory
Spring 2014	EE 30363 Random Phenomena in Electrical Engineering
Fall 2013	MATH 30310 Undergraduate Coding Theory MATH 12550-03 Calculus I
Spring 2013	MATH 87500 Graduate Coding Theory
Fall 2012	EE 80654 Coding Theory
Spring 2006	MATH 10260 Elements of Calculus II (2 sections)
Fall 2005	MATH 40210 Basic Combinatorics MATH 10250 Elements of Calculus I

Courses Taught at SDSU

Spring 2012	MATH 521b - Abstract Algebra II	Fall 2006	MATH 524 - Linear Algebra
	MATH 625 - Coding Theory		MATH 521a - Abstract Algebra I
Fall 2011	MATH 151 - Calculus for Science	Spring 2005	MATH 521a - Abstract Algebra I
	MATH 521a -Abstract Algebra I		MATH 524 - Linear Algebra
Spring 2011	MATH 522 - Number Theory	Fall 2004	MATH 623 - Matrix Theory
	MATH 521a -Abstract Algebra I		MATH 254 - Intro to Linear Algebra
Fall 2010	MATH 623 - Matrix Theory	Spring 2004	MATH 120 - Calculus for Business
	MATH 524 - Linear Algebra		MATH 254 - Intro to Linear Algebra
Spring 2010	MATH 151 - Calculus for Science	Fall 2003	MATH 120 - Calculus for Business
	MATH 625 - Coding Theory		MATH 254 - Intro to Linear Algebra
Fall 2009	MATH 151 - Calculus for Science	Spring 2003	MATH 524 - Linear Algebra
	MATH 623 - Matrix Theory		MATH 254 - Intro to Linear Algebra
Spring 2008	MATH 254 - Intro to Linear Algebra	Fall 2002	MATH 525 - Coding Theory
	MATH 627b - Modern Algebra II		MATH 254 - Intro to Linear Algebra
Fall 2007	MATH 623 - Matrix Theory	Spring 2002	MATH 254 - Intro to Linear Algebra
	MATH 627a - Modern Algebra I		MATH 254 - Intro to Linear Algebra
Spring 2007	MATH 521a - Abstract Algebra I	Fall 2001	MATH 525 - Coding Theory
	MATH 521b - Abstract Algebra II		