

PADMAPANI SENEVIRATNE

Department of Mathematics, East Texas A&M University

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EDUCATION

Ph.D. Mathematical Sciences, Clemson University, South Carolina	August, 2007
M.S. Mathematical Sciences, Clemson University, South Carolina	May, 2003
B.Sc. Mathematics, University of Peradeniya, Sri Lanka	August, 1999

PROFESSIONAL EXPERIENCE

Professor	East Texas A&M University (ETAMU)	09/2023 - Present
Associate Professor	Texas A&M University - Commerce (TAMUC)	09/2017 – 08/2023
Assistant Professor	Texas A&M University - Commerce (TAMUC)	09/2014 – 08/2017
Assistant Professor	American University of Sharjah (AUS)	08/2007 – 08/2014

RESEARCH

Research Interests : Applications of Algebra and Discrete Mathematics: Classical & Quantum Error-Correcting Codes.

Publications

1. N. Zoubir, Kenza Guenda and **Padmapani Seneviratne**, LCD Codes over Finite Fields, *Discrete Mathematics, Algorithms and Applications*, Accepted.
2. **Padmapani Seneviratne**, Hannah Cuff, Alexandra Koletsos, Kerry Seekamp and Adrian Thananopavarn, New qubit codes from multidimensional circulant graphs, *Discrete Math.*, vol. 347, (2024) 114058.
3. **Padmapani Seneviratne** and Martianus Frederic Ezerman, New quantum codes from metacirculant graphs via self-dual additive F_4 -codes, *Advances in Mathematics of Communications*, (2023), vol. 17, Issue 1: 288-297. Doi: 10.3934/amc.2021073
4. **Padmapani Seneviratne** and Taher Abualrub, New linear codes derived from skew generalized quasi-cyclic codes of any length, *Discrete Mathematics*, (2022), vol. 345, Issue 11, 113018. <https://doi.org/10.1016/j.disc.2022.113018>
5. Srinivasulu, B., **Seneviratne, P.** $Z_2Z_2[u4]$ -cyclic codes and their duals, *Comp. Appl. Math. (Springer)*, vol. 41, no.172 (2022). <https://doi.org/10.1007/s40314-022-01872-9>
6. Fella, N., Guenda, K., Özbudak, F. and **P. Seneviratne**, Construction of self dual codes from graphs, *Applicable Algebra in Engineering, Communication and Computing (Springer)*, vol.35, pages 545–556, (2024). <https://doi.org/10.1007/s00200-022-00567-2>
7. Taher Abualrub and **Padmapani Seneviratne**, Quasi-cyclic and generalized quasi-cyclic codes and uniqueness of their generators, *Discrete Mathematics, Algorithms and Applications (World Scientific)*, vol. 15, No. 06, 2250145 (2023).
8. **Padmapani Seneviratne**, A remark on skew factorization and new F_4 -linear codes, *Discrete Mathematics, Algorithms and Applications (World Scientific)*, vol. 14, No. 6 (2022) 2250011 (9 pages), <https://doi.org/10.1142/S1793830922500112>

9. **Padmapani Seneviratne** and Martianus Frederic Ezerman, Two new zero-dimensional qubit codes from bordered metacirculant construction, *Discrete Mathematics*, vol. 344 (2021), 112491.
<https://doi.org/10.1016/j.disc.2021.112491>
10. B. Srinivasulu and **P. Seneviratne**, Some results on $F_4[v]$ -double cyclic codes, *Computational and Applied Mathematics (Springer)*, vol. 40, no. 64 (2021). <https://doi.org/10.1007/s40314-021-01428-3>
11. **Padmapani Seneviratne**, Jennifer D. Melendez and Alexander N. Westbrooks, Properties and Parameters of Codes from Line Graphs of Circulant Graphs, *Journal of Combinatorial Mathematics and Combinatorial Computing*, vol 114 (2020), pp 353–360.
12. Taher Abualrub, Martianus Frederic Ezerman, **Padmapani Seneviratne** and Patrick Solé, Skew Generalized Quasi Cyclic Codes, *TWMS Journal of Pure and Applied Mathematics*, vol. 9, issue 2 (2018), pp. 123–134.
13. **P. Seneviratne** and L. Melcher, LCD codes from projective spaces, *Discrete Mathematics, Algorithms and Applications (World Scientific)*, vol. 10, no. 06 (2018), 1850079.
<https://doi.org/10.1142/S1793830918500799>
14. **P. Seneviratne** and L. Melcher, On generalized MacDonald codes, *Involve-A Journal of Mathematics*, vol. 11 (2018), issue 5, pp. 885–892.
15. J. D. Key and **P. Seneviratne**, Partial permutation decoding for MacDonald codes, *Applicable Algebra in Engineering, Communication and Computing (Springer)*, vol. 27, no. 5, (2016), pp. 399–412.
16. **Padmapani Seneviratne**, Generalized hypercube graph $Q_n(S)$, graph products and self-orthogonal codes, *Journal of Algebra Combinatorics Discrete Structures and Applications*, vol. 3, no. 1 (2016), pp. 37–44.
17. **Padmapani Seneviratne**, Codes from multipartite graphs and minimal permutation decoding sets, *Discrete Mathematics, Algorithms and Applications*, vol. 7, no. 4 (2015), 1550060.
18. **Padmapani Seneviratne**, Codes associated with circulant graphs and Permutation decoding, *Designs, Codes & Cryptography*, vol. 70, no. 1-2, (2014).
19. **P. Seneviratne** and J. Limbupasiriporn, Permutation decoding of codes from generalized Paley graphs, *Applicable Algebra in Engineering, Communication and Computing (Springer)*, vol. 24, (2013), pp. 225–236.
20. T. Abualrub, N. Aydin, **P. Seneviratne**, θ -cyclic codes over $F_2 + vF_2$, *Australian Journal of Combinatorics*, vol. 54 (2012), pp.115–126.
21. Irfan Siap, Taher Abualrub, Nuh Aydin, **Padmapani Seneviratne**, Skew Cyclic Codes Of Arbitrary Length, *International Journal of Information and Coding Theory*. vol. 2, no. 1 ,(2011), pp. 10–20.
22. T. Abualrub, **P. Seneviratne**, Skew codes over rings, *Lecture Notes in Engineering and Computer Science*, vol: 2181, no. 1, (2010), pp.846–847.
23. **Padmapani Seneviratne**, Partial permutation decoding for the first-order Reed-Muller codes, *Discrete Mathematics*, vol. 309, (2009), 1967–1970.
24. J.D. Key and **P. Seneviratne**, Permutation decoding for binary codes from lattice graphs, *Discrete Mathematics*, vol. 308, no. 13, (2008), pp. 2862–2867.
25. J.D. Key and **P. Seneviratne**, Permutation Decoding for Binary Self-Dual Codes from the Graph Q_n , where n is Even, *Advances in Coding Theory and Cryptography*, Series on Coding Theory and Cryptography, 3. pages 152–159, 2007.
26. J.D. Key and **P. Seneviratne**, Codes from the line graphs of complete multipartite graphs and PD-sets, *Discrete Mathematics*, vol. 307 (2007), pp.2217–2225.
27. J.D. Key and **P. Seneviratne**, Binary codes from rectangular lattice Graphs & permutation decoding, *European J. Combinatorics*, vol. 28, (2007), pp. 121–126.

Refereed Conference Proceedings

28. **Padmapani Seneviratne**, Codes associated with circulant graphs and permutation decoding, *Proceedings of the Third International Castle Meeting on Coding Theory and Applications, Cardona Castle in Cardona*, (Editors: J. Borges and M. Villanueva) Pages: 257 - 264. volume I, 2011.
29. T. Abualrub, I. Siap and **P. Seneviratne**, On the construction of skew cyclic codes for any length, *Proceedings of the 3rd International conference on modeling, simulation and applied optimization (ICMSA)'09*.
30. **P. Seneviratne**, Binary codes from complete multipartite graphs and permutation decoding, *Proceedings of the 3rd International conference on modeling, simulation and applied optimization (ICMSA)'09*.

Articles in-review

31. Amina Delhoum, Nuh Aydin, **Padmapani Seneviratne**, and Yiyang Lu, On factorization of polynomials in skew polynomial rings: Resolution of a conjecture, new results and new codes.
32. Andreas Garcia, Layla Jarrahy, Elisaveta Samoylov and **Padmapani Seneviratne**, New quantum codes from generalized Toeplitz graphs.
33. Nuh Aydin, Martianus Frederic Ezerman, Amina Delhoum and **Padmapani Seneviratne**, New qubit and qutrit stabilizer codes from skew hermitian self-orthogonal codes.

Presentations (Invited & Conference)

1. *Quantum codes from generalized Toeplitz graphs*, Invited talk, AMS central sectional meeting, University of Texas San Antonio, September 14-15, 2024.
2. *LCD codes over finite fields*, Invited talk, AMS Special Session on Advances in Coding Theory II, Joint Mathematics Meetings, San Francisco, 2024.
3. *Codes from Metacirculant graphs*, CombinaTexas conference, Texas A&M University, March 4-5, 2022.
4. *Binary codes from line graphs of circulant graphs*, MCCCC 32, Duluth MN, October 5-7, 2018.
5. *Codes from Paley-type bipartite graphs*, CombinaTexas conference, Texas A&M University, February 10-11, 2018.
6. *Paley-type bipartite graphs and self-dual codes*, Invited-talk, Mathematical Congress of the Americas, July 24-29, 2017, Montreal, Canada.
7. *On a class of few weight codes*, Invited-talk, AMS sectional meeting, fall 2016, October 28-30, 2016, Minneapolis, MN.
8. *$(0, 2)$ -graphs and their codes*, Joint Mathematics Meetings, January 10-13, 2015, San Antonio, TX.
9. *Self-dual codes from $(0, 2)$ -graphs*, Antalya Algebra days, 2014, Antalya, Turkey.
10. *Permutation decoding for codes from generalized Paley graphs*, 18th International Conference on Applications of Computer Algebra, special session on Coding Theory, June 25-28, 2012, Sofia, Bulgaria.
11. *Codes from generalized Paley graphs*, Joint Mathematics Meetings 2012, January 04-07, Boston, MA, USA.
12. *Codes associated with circulant graphs and Permutation decoding*, Third International Castle Meeting on Coding Theory and Applications, September 11-15, 2011, Cardona, Spain.
13. *Codes from multipartite graphs and permutation decoding*, The 3rd biennial Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM), May 31 - June 03, 2011. Victoria, BC, Canada.
14. *Skew Cyclic Codes Over $\mathbf{F}_2 + v\mathbf{F}_2$* , Algebraic Combinatorics & Applications(ALCOMA'10), April 11- 18, 2010. Thurnau, Germany.
15. *An optimal class of binary codes for permutation decoding*, Fortieth Southeastern International Conference on Combinatorics, Graph Theory and Computing. March 2-6, 2009, Florida Atlantic University, Boca Raton, USA.
16. *Binary Codes from Complete Multi-Partite Graphs and Permutation Decoding*, ICMSAO'09 Third International Conference On Modeling, Simulation, and Applied Optimization, January 20 - 22, 2009, Sharjah, UAE.
17. *Partial permutation decoding of Hermitian codes*, Special Session on Algebraic Coding Theory honoring the retirement of Harold N. Ward at AMS Central Section Meeting, October 2007, Chicago, IL.

GRANTS

External Grants - Funded

- National Science Foundation, *REU Site: Theoretical and Application-Driven Mathematics*, DMS – 2243991, \$385, 387 (Role: PI) 2023–2026
- NREUP grant (Math. Association of America, funded by the NSF Grant DMS - 1652506), \$27, 500 (Role: Co-PI) 2020
- NREUP grant (Math. Association of America, funded by the NSF Grant DMS - 1652506), \$28, 260 (Role: Co-PI) 2018

Internal Grants & Awards

- Faculty Research Enhancement Project (FREP) Grant, TAMUC, \$9880, (Role: PI) 2016/2017

- International Faculty Development Award, TAMUC, \$1200

Spring 2017

HONORS AND AWARDS

- | | |
|---|------|
| • H.M. Lafferty Distinguished Faculty Award for Scholarship and Creative Activity | 2024 |
| • Researcher of the year: TAMUC Annual Research Awards | 2023 |
| • Clemson University: MURI Graduate Research Fellowship | 2005 |
| • Clemson University: Department of Mathematical Sciences Teaching Excellence Award | 2004 |

TEACHING

East Texas A&M University 2014 - Present

- Graduate
 1. MATH 522: Topology I, Summer I, 2016 – 2020.
 2. MATH 523: Topology II, Summer II, 2016 – 2020.
 3. MATH 531: Theory of Matrices, Fall - 2016, 2019, 2021, 2023, 2024.
 4. MATH 536: Cryptography, Summer I - 2019, 2021, 2022, 2024.
 5. MATH 537: Theory of Numbers, Spring - 2016, 2018, 2020, 2022, 2024.
 6. MATH 543: Abstract Algebra I, Fall - 2018, 2020, 2024.
 7. MATH 544: Abstract Algebra II, Spring 2019, 2021.
 8. MATH 597: Coding Theory, Spring - 2022.
- Undergraduate
 - MATH 1314: College Algebra: Fall 2025.
 - MATH 1342: Elementary Statistical Methods: Fall 2021.
 - MATH 1324: Mathematics for Business Applications I: Fall 2023.
 - MATH 1325: Mathematics for Business Applications II: Fall 2015, 2017, Spring 2015.
 - MATH 2305: Discrete Mathematics: Fall 2022, 2024, Spring 2023, Summer 2017.
 - MATH 2318: Linear Algebra: Fall 2020, 2022, Spring 2015, 2017, 2019, 2021, Summer 2021 – 2024.
 - MATH 2320: Differential Equations: Fall 2014.
 - MATH 2413: Calculus I: Fall 2017, 2019, Spring 2016, 2018.
 - MATH 2414: Calculus II: Fall 2014.
 - MATH 2415: Calculus III: Fall 2014, 2016, 2017, Spring 2015, 2018, 2019.
 - MATH 333: Advanced Linear Algebra: Fall 2019, 2020, 2021, 2023, 2024.
 - MATH 334: Abstract Algebra: Summer 2015, 2021, Fall 2015, 2022, Spring 2020, 2021.
 - MATH 401: Mathematical Statistics: Fall 2015, 2016, 2018.
 - MATH 437: Theory of Numbers: Spring 2017, 2023, 2024, 2025.
 - MATH 453: Essentials of Statistics: Fall 2015, 2018, 2020, Spring 2023, 2024, 2025.
 - MATH 489: Partial Differential Equations: - Spring 2016 (Independent study).