

# PADMAPANI SENEVIRATNE

## PRESENT ADDRESS

Department of Mathematics  
Texas A&M University-Commerce  
Commerce, TX 75428.

## CONTACT INFORMATION

email: padmapani.seneviratne@tamuc.edu  
phone: (903)886-5952

## RESEARCH INTERESTS

Applications of Algebra & Discrete Mathematics: Coding Theory and related applications.

## EDUCATION

**Clemson University, South Carolina, USA.**

Ph.D. August 2007.

- Advisor: Dr Jennifer D. Key.
- Dissertation Topic: "Permutation decoding and codes from graphs and designs."

## PROFESSIONAL EXPERIENCE

<b>Professor</b>	Texas A&M University-Commerce	09/01/2023-Present
<b>Associate Professor</b>	Texas A&M University-Commerce	09/01/2017-08/2023
<b>Assistant Professor</b>	Texas A&M University-Commerce	09/01/2014 -08/2017.
<b>Assistant Professor</b>	American University of Sharjah	08/2007-08/2014

## External GRANTS

- National Science Foundation, DMS 2243991, REU Site: Theoretical and Application-Driven Mathematics, 2023 2026, \$385,387. (Role: PI)
- Mathematical Association of America-NREUP grant (funded by the NSF Grant DMS-1652506), 2020, \$27,500.(ROLE: Co-PI). (Due to COVID 19, rescheduled for Summer 2021).
- Mathematical Association of America-NREUP grant (funded by the NSF Grant DMS-1652506), 2018, \$28,260. (ROLE: Co-PI).

## Internal Grants & Awards

- Faculty Research Enhancement Project(FREP) Grant, TAMUC, \$9880, Role: PI, 2016/2017.
- International faculty development award, TAMUC, \$1200, Spring 2017.

## PUBLICATIONS (Refereed Articles)

1. **P. Seneviratne** and Martianus Frederic Ezerman, "New quantum codes from metacirculant graphs via self-dual additive  $\mathbb{F}_4$ -codes", *Advances in Mathematics of Communications*, Available online, <https://doi.org/10.3934/amc.2021073>.
2. **P. 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>
3. Srinivasulu, B., **Seneviratne, P.** " $\mathbb{Z}_2\mathbb{Z}_2[u4]$ -cyclic codes and their duals". *Comp. Appl. Math.* (Springer) 41, 172 (2022). <https://doi.org/10.1007/s40314-022-01872-9>
4. Fella, N., Guenda, K., Özbudak, F. and **P. Seneviratne**, "Construction of self dual codes from graphs", *Applicable Algebra in Engineering, Communication and Computing (Springer)*, AAEC, (2022), <https://doi.org/10.1007/s00200-022-00567-2>.
5. Taher Abualrub and **P. Seneviratne**, "Quasi-cyclic and generalized quasi-cyclic codes and uniqueness of their generators", *Discrete Mathematics, Algorithms and Applications (World Scientific)*, Accepted.

6. **P. Seneviratne**, “A remark on skew factorization and new  $\mathbb{F}_4$ -linear codes”, *Discrete Mathematics, Algorithms and Applications (World Scientific)*, Vol. 14, No. 6 (2022) 2250011 (9 pages), <https://doi.org/10.1142/S1793830922500112>
7. **P. 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>
8. B. Srinivasulu and **P. Seneviratne**, “Some results on  $\mathbb{F}_4[v]$ -double cyclic codes”, *Computational and Applied Mathematics (Springer)*, vol. 40, Article number: 64 (2021). <https://doi.org/10.1007/s40314-021-01428-3>
9. **P. 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.
10. Taher Abualrub, Fred Ezerman, **P. Seneviratne** and Patrick Solé, “Skew Generalized Quasi Cyclic Codes”, *TWMS journal of Pure and Applied Mathematics*, vol. 9, issue 2 (2018), pp 123–134.
11. **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>
12. **P. Seneviratne** and L. Melcher, “On generalized MacDonald codes”, *Involve-A journal of Mathematics*, , vol. 11 (2018), issue 5, pp 885–892.
13. J. D. Key and **P. Seneviratne**, “Partial permutation decoding for MacDonald codes”, *Applicable Algebra in Engineering, Communication and Computing (Springer)*, AAEECC, vol. 27, no. 5, (2016), pp 399–412.
14. **P. 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), 37–44.
15. **P. Seneviratne**, “Codes from multipartite graphs and minimal permutation decoding sets,” *Discrete Mathematics, Algorithms and Applications*, vol. 7, no 4 (2015), 1550060.
16. **P.Seneviratne**, “Codes associated with circulant graphs and Permutation decoding”. *Designs, Codes & Cryptography*. vol. 70, no. 1-2, (2014).
17. **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.
18. T. Abualrub, N. Aydin, **P.Seneviratne**, “ $\theta$ -cyclic codes over  $\mathbb{F}_2 + v\mathbb{F}_2$ ”, *Australian Journal of Combinatorics*, vol. 54 (2012), pp.115–126.
19. Irfan Siap, Taher Abualrub, Nuh Aydin, **P.Seneviratne**, “Skew Cyclic Codes Of Arbitrary Length”. *International Journal of Information and Coding Theory*. vol. 2, no. 1 ,(2011), pp. 10–20.
20. T. Abualrub, **P.Seneviratne**, “Skew codes over rings”, *Lecture Notes in Engineering and Computer Science* Year: vol: 2181, no. 1, (2010), pp.846–847.
21. **P.Seneviratne**, “Partial permutation decoding for the first-order Reed-Muller codes”. *Discrete Mathematics*, vol. 309, (2009), 1967–1970.
22. J.D. Key and **P. Seneviratne**. “Permutation decoding for binary codes from lattice graphs”. *Discrete Mathematics*, vol. 308, no. 13, (2008), pp. 2862–2867.
23. 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.
24. 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.
25. J.D. Key & **P.Seneviratne**, “Binary codes from rectangular lattice Graphs & permutation decoding”, *European J. Combinatorics*, vol. 28, (2007), pp. 121–126.

## CONFERENCE PROCEEDINGS(Refereed)

26. **P. 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.*
27. *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).*
28. **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).*

## PRESENTATIONS

1. “Codes from Metacirculant graphs”, Combina-Texas conference, Texas A&M University, March 4-5, 2022.
2. “Binary codes from line graphs of circulant graphs”, MCCCC 32, Duluth MN, October 5-7, 2018.
3. “Codes from Paley-type bipartite graphs”, Combina-Texas conference, Texas A&M University, February 10-11, 2018.
4. “Paley-type bipartite graphs and self-dual codes”, Mathematical Congress of the Americas, July 24-29, 2017, Montreal, Canada. Invited-talk.
5. “On a class of few weight codes”, AMS-Fall Central sectional meeting, October 28-30, 2016, Minneapolis, MN. Invited-talk.
6. “ $(0, 2)$ -graphs and their codes“, Joint Mathematics Meetings, January 10-13, 2015, San Antonio, TX.
7. “Self-dual codes from  $(0, 2)$ -graphs”, Antalya Algebra days, 2014, Antalya, Turkey.
8. “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.
9. “Codes from generalized Paley graphs”, Joint Mathematics Meetings 2012, January 04-07, Boston, MA, USA.
10. “Codes associated with circulant graphs and Permutation decoding”. 3rd International Castle Meeting on Coding Theory and Applications, September 11-15, 2011, Cardona, Spain.
11. “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.
12. “Skew Cyclic Codes Over  $F_2 + vF_2$ ”. Algebraic Combinatorics & Applications(ALCOMA’10), April 11- 18, 2010. Thurnau, Germany.
13. “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.
14. “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.
15. P. Seneviratne and G. L. Matthews. “Partial permutation decoding of Hermitian codes”. Special Session on Algebraic Coding Theory honoring the retirement of Harold N. Ward at AMS Central Section Meeting, Chicago, IL (October 2007).

## ADVISING

## Visiting Scholars

- Bathala Srinivasulu, Indian Institute of Technology-Roorkee, 2019-2021

## Honors Theses

- Lauren Melcher, May 2018, Ph.D. candidate in Mathematical Modelling, Rochester Institute of Technology.
- Renee Landers, May 2019, Mainframes Engineer at ATOS.
- Jennifer Melendez, May 2021, Software Developer at HCL Technologies.

## REU-Students

- TADM-REU-2023
  1. Hannah Cuff (Trinity College)
  2. Alexandra Koletsos (Columbia University)
  3. Kerry Seekamp (Smith College)
  4. Adrian Thananopavarn (Princeton University)
- NREUP-2021
  1. Ashlee Story (NREUP 2021), Software Engineer at L3Harris-ISR.
  2. Victor Ezem.
- NREUP-2018
  1. Alexander N. Westbrook, Systems Engineer at L3Harris.
  2. Jennifer D. Melendez (NREUP 2018), Software Developer at HCL Technologies.

## Graduate Students

- MATH 518 - Arife Altin, August 2018, Ph.D. candidate at the University of Memphis.
- MATH 518 - Katherine Foster, May 2022.
- MATH 518 - Emmanuel Acquah, Expected May 2023.
- MATH 518 - Megdam Chowdhury, Expected May 2023.
- MATH 595 - Dorinda Quarshie, December 2018.
- MATH 595 - Areej Khalaf, December 2019.
- MATH 595 - Hung Lau, December 2019.
- MATH 595 - Santosh Muralidharan, December 2019.
- MATH 595 - Olivia Orrantia-Kotowski, May 2020.
- MATH 595 - Ada McCarthy Pratt, May 2021, Instructor, Dallas College.
- MATH 595 - Caleb Donnenwerth, May 2021, Ph.D. candidate at UNT.
- MATH 595 - Eric Offei, December 2021.
- MATH 595 - Camrunn Beck, May 2021, Revenue Management Analyst at American Airlines.
- MATH 518 - Kathryn Foster, May 2022, High school teacher.
- MATH 595 - Peizhi Zhu, Fall 2022.
- MATH 595 - Isis Carrington, December 2022.
- MATH 518 - Emmanuel Acquah, May 2023, Ph.D. candidate, University of Texas - Arlington.
- MATH 518 - Megdam Chowdhury, May 2023, Ph.D. candidate, University of Kansas.

## PROFESSIONAL DEVELOPMENT

- Research Experience for Undergraduate Faculty, American Institute of Mathematics, San Jose, CA, August 01-05, 2022.
- Faculty teaching certificate program 2011/2012 at the American University of Sharjah.

## TEACHING

### Texas A&M University-Commerce.

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