# EMİNE ŞULE YAZICI YURET

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## EDUCATION

**AUBURN UNIVERSITY** Department of Discrete and Statistical Sciences, AL, USA
*Degree earned*: Doctor of Philosophy (Aug 2003)
*Advisor:* Distinguished University Prof. *Charles Curtis Lindner*

**BOĞAZİÇİ UNIVERSITY** Department of Mathematics, İST, TURKEY
*Degree attended:* Master of Science

- *Dates attended*: Jan 2000 - May 2000

**BOĞAZİÇİ UNIVERSITY** Department of Mathematics, İST, TURKEY
*Degree earned*: Bachelor of Science (Jan 2000)

## RESEARCH AREA

Combinatorial Design Theory

## WORK EXPERIENCE

**Professor of Mathematics** (Oct 2020- ), Koç University, TURKEY

**Associate Professor of Mathematics** (May 2012-Oct 2020), Koç University, TURKEY

**Assistant Professor of Mathematics** (Sep 2005- May 2012), Koç University, TURKEY

**Visiting Academic** (Jan-Aug 2019), The University of Queensland, Australia.

**Visiting Academic** (Jan 2017), Auburn University, USA.

**Visiting Academic** (Sep 2016), Monash University, Australia.

**Visiting Academic** (Aug-Sep 2016), The University of Queensland, Australia.

**Visiting Academic** (Jun-Sep 2014), The University of Queensland, Australia.

**Visiting Academic** (Jul-Aug 2007), The University of Queensland, Australia.

**Visiting Academic** (Jul-Aug 2006), Auburn University, USA.

**Post-Doctoral Research Fellow** (Jul 2004- Jun 2005), University of Queensland, Australia.

**Post Doctoral Position** (Aug 2003- May 2004), Auburn University, Auburn, AL, USA.

**Graduate Teaching Assistant** (Aug 2000- Aug 2003), with full tuition waiver and stipend, Auburn University, Auburn, AL, USA.

**PUBLICATIONS**

1. **To Appear**: D. Donovan, M. Azadi, S. Ganpule, T. Nuralishahi, A. Smith, S. Josserand, B. Thompson, T. Reay, L. Gay, K. Burrage, P. Burrage, B. Lawson, E. Ş. Yazıcı, "*Improved Learning Cycle Assessment Of Stimulated Wells' Performance Through Advanced Mathematical Modelling*", SPE Journal.
2. **Submitted**: D. Donovan, A. Rao, E. Üsküplü, E. Ş. Yazıcı, "*High Rate LDPC and QC-LDPC Codes from Difference Matrices and Difference Covering Arrays*".
3. **Submitted**: D. Donovan, A. Price, A. Rao, E. Üsküplü, E. Ş. Yazıcı, "*High rate Low Density Parity Check Codes from Partially Balanced Incomplete Block Designs*".
4. **To Appear**: P. Bonacini, S. Küçükçifçi, S. Milici, E. Ş. Yazıcı, "*On uniformly resolvable ($C_4$;$K_{\{1;3\}}$)-designs*", Contributions to Discrete Math.
5. N. Cavenagh, D. Donovan, E. Ş. Yazıcı, "*Biembeddings of cycle systems using integer Heffter arrays*", Journal of Combinatorial Designs, 28 (2020), no 12, 900-922.
6. D. Donovan, M. Granell, E. Ş. Yazıcı, "Constructing and embedding mutually orthogonal Latin squares: reviewing both new and existing results", Comm. Math. Uni. Carolinae., 61 (2020), no 4, 437-457.
7. O. Doğan, S. Küçükçifçi, E. Ş. Yazıcı, "*$Q_5$- factorizations of $\lambda K_n$"*, Journal of Combinatorial Designs, 28 (2020), 407-418.
8. D. Donovan, M. Granell, E. Ş. Yazıcı, "*Embedding partial Latin squares in Latin squares with many mutually orthogonal mates*", Discrete Mathematics, 343 (2020), no 6, 111835.
9. K. Burrage, N. Cavenagh, D. Donovan, E. Ş. Yazıcı, "*Globally simple Heffter arrays H(n;k) when k≡0,3 mod 4*", Discrete Mathematics, 343 (2020), no 5, 111787.
10. N. Cavenagh, J. Dinitz, D. Donovan, E. Ş. Yazici, "*The existence of square non-integer Heffter arrays*", Ars Mathematica Contemporanea, 17 (2019), 369-395.
11. Q. Wang, D. Donovan, T. Reay, I. Rodger, B. Thompson, F. Zhou, Xi. Su, E. Ş. Yazici, "*Impacting Factors on Horizontal Coal Seam Gas Well Production and Proxy Model Comparison*", SPE/AAPG/SEG Asia Pacific Unconventional Resources Technology Conference, (2019), Brisbane.
12. S. Küçükçifçi, C.C. Lindner, S. Özkan, E. Ş. Yazıcı, "*Maximum packings of inside perfect 8-cycle systems*", Australasian Journal of Combinatorics, 75 (2019), 146-157.
13. S. Küçükçifçi, C.C. Lindner, E. Ş. Yazıcı, "Outside perfect 8-cycle systems", Australasian Journal of Combinatorics, 71 (2018), 476-484.
14. K. Burrage, P. Burrage, D. Donovan, T. Mccourt, H. Thompson, E. Ş. Yazıcı, "Estimates of the coverage of parameter space by Latin Hypercube and Orthogonal array based sampling", Applied Mathematical Modelling, 57 (2018), 553-564.
15. M. Gionfriddo, S. Küçükçifçi, S. Milici, E. Ş. Yazıcı, "Uniformly resolvable ($C_4$;$K_{\{1;3\}}$)-designs of index 2", Contributions to Discrete Mathematics, 13 (2018), 23-34.
16. F. Demirkale, D. Donovan, S. Küçükçifçi, E. Ş. Yazici, "*Orthogonal trades and the intersection problem for orthogonal arrays*", Graphs and Combinatorics, 32 (2016), 903-912.
17. D. Archdeacon, J. Dinitz, D. Donovan, E. Ş. Yazici, "*Square interger Heffter arrays with empty cells*", Designs Codes and Cryptography, 77 (2015), 409-426.
18. D. Donovan, E. Ş. Yazıcı "*A polynomial embedding of pair of partial orthogonal latin squares*", Journal of Combinatorial Theory Series A, 126 (2014), 24-34.

19. F. Demirkale, E. Ş. Yazıcı, *"On the spectrum of minimal defining sets of full designs"*, Graphs and Combinatorics, 30 (2014), 141-157.
20. E. Ş. Yazıcı*, "The number of common flowers of two STS(v)s and embeddable Steiner triple trades",* Discrete Mathematics, 313 (2013), no. 7, 896-902.
21. S. Küçükçifçi, B. Smith, G. Quattrocchi, E. Ş. Yazıcı, "*On regular embedding of H-designs into G-designs*", Utilitas Mathematica, 92 (2013), 97-127.
22. S. Küçükçifçi, B. Smith, E. Ş. Yazıcı, *"The full metamorphosis of $\lambda$-fold block designs with block size four into $\lambda$ -fold kite systems"*, Utilitas Mathematica, 90 (2013), 33-60.
23. D. Donovan, J. Lefevre, M. Waterhouse, E. Ş. Yazıcı, *"Defining sets of full designs with block size three II"*, Annals of Combinatorics, 16 (2012), 507-515.
24. C. C. Lindner, S. Küçükçifçi, E. Ş. Yazici, *"The full metamorphosis of $\lambda$-fold block designs with block size four into $\lambda$ -fold triple systems"*, Ars Combinatoria, 106 (2012), 337-351.
25. C. C. Lindner, S. Küçükçifçi, E. Ş. Yazıcı, *"The full metamorphosis of $\lambda$-fold block designs with block size four into $\lambda$ -fold 4-cycle systems"*, Ars Combinatoria, 104 (2012), 81-96.
26. B. R. Smith, S. Küçükçifçi, E. Ş. Yazıcı, "*Decomposing complete multipartite graphs into closed trails of arbitrary even lengths"*, Journal of Combinatorial Designs, 19 (2011), 455-462.
27. E. Kolotoğlu, E. Ş. Yazıcı, "*On minimal defining sets of full designs and self-complementary designs, and a new algorithm for finding defining sets of t-designs*", Graphs and Combinatorics, 26 (2010), 259-281.
28. Ö. Özkasap, M. Çağlar, E. Ş. Yazıcı, S. Küçükçifçi, *"An analytical framework for self-organizing peer-to-peer anti-entropy algorithms"*, Performance Evaluation, 67 (2010), 141-159.
29. D. Donovan, J. Lefevre, M. Waterhouse, E. Ş. Yazıcı, *"On defining sets of full designs with block size three"*, Graphs and Combinatorics, 25 (2009), 825-839.
30. E. J. Billington, C.C. Lindner, S. Küçükçifçi, E. Ş. Yazıcı, *"Embedding 4-cycle systems into octogon triple systems*", Utilitas Mathematica, 79 (2009), 99-106.
31. N. J. Cavenagh, D. Donovan, E. Ş. Yazıcı, *"Minimal homogeneous Steiner 2-(v,3) trades"*, Discrete Mathematics, 308 (2008), no. 5-6, 741-752.
32. G. Havas, J. L. Lawrence, C. Ramsey, A. P. Street, E. Ş. Yazıcı, *"The defining set spectrum of designs can have arbitrarily large gaps"*, Utilitas Mathematica, 75 (2008), 67-81.
33. E. J. Billington, C. C. Lindner, E. Ş. Yazıcı, *"The triangle intersection problem for $K_4$ - e designs",* Utilitas Mathematica, 73 (2007), 3-21.
34. E. Ş. Yazıcı, S. Küçükçifçi, M. Çağlar, Ö. Özkasap, "*Exact probability distributions for peer-to-peer epidemic information diffusion*", ACM SIGMETRICS Performance Evaluation Review, 34 (2007), No 3, 6-8.
35. Ö. Özkasap, E. Ş. Yazıcı, S. Küçükçifçi, M. Çağlar, *"Exact performance measures for peer-to-peer epidemic information diffusion"*, Lecture Notes in Computer Science, Springer Verlag, 4263 (2006), 866-876.
36. N. J. Cavenagh, D. M. Donovan, E. Ş. Yazıcı, "*Minimal homogeneous Latin trades*, Discrete Mathematics, 306 (2006), no. 17, 2047-2055.
37. E. Ş. Yazıcı, *"Metamorphosis of 2-fold 4-cycle systems into maximum packing's of 2-fold 6-cycle systems",* Australasian Journal of Combinatorics, 32 (2005), 331- 338.

38. C. C. Lindner, E. Ş. Yazıcı, "*The triangle intersection problem for kite systems"*, Ars Combinatoria, 75 (2005), 225-231.

## POPULAR SCIENCE ARTICLES

S. Küçükçifci ve E. Ş. Yazıcı, "*Tasarım Kuramına Peter Keevash'ın Damgası*", Matematik Dünyası, (20), Sayı 108-109, 182-186.

E. Ş. Yazıcı, "*Latin ve Grekoromen Kareler*", Matematik Dünyası, (04) Kış, Sayı 4, 9-12.

Ali Nesin ve E. Ş. Yazıcı, "*Latin Dönüşümleri*", Matematik Dünyası, (04) Kış, Sayı 4, 13-16.

E. Ş. Yazıcı, "*Doğuran Fonksiyonlar*", Matematik Dünyası, (05) Bahar, Yıl 14, Sayı 1, 37-38.

## PROJECTS AND AWARDS

**TUBITAK**, **1001 Project** (01/09/2021-31/08/2023), *Non-expandable orthogonal partial Latin squares",* Chief Investigator

**Ethel Raybould Visiting Academic Fellowship** (2019), The University of Queensland, Brisbane, Australia

**TUBITAK, 2219 Program, Visiting Academic Fellowship** (2018)

**TUBITAK**, **1001 Project** (01/04/2017-01/10/2018), *Embedding Problems in Combinatorial Designs",* Chief Investigator

**TUBITAK**, **1003 Project,** (01.11.2014-01.11.2016), *Composite Network Modeling of Neurological/Psychiatric Disorders and Application to Alzheimer's Disease,* Researcher

**BAGEP, The Science Academy, Turkey, Young Scientist Award** (2015)

**TUBITAK, 2219 Program, Visiting Academic Fellowship** (2014)

**Ethel Raybould Visiting Academic Fellowship** (2013), The University of Queensland, Brisbane, Australia

**TUBITAK**, **1001 Project** (01/04/2011-01/04/2014), *Some structure problems in graph designs,* Chief Investigator

**Associate Professorship** (Feb 2008)**,** Higher Education Council of Turkey

**TUBITAK**, **3501 Career Project** (1/1/2007-31/12/2009), *A secret sharing method: Defining sets in combinatorial designs,* Chief Investigator

**Ethel Raybould Visiting Academic Fellowship** (2007), The University of Queensland, Brisbane, Australia

## MEMBERSHIPS

Institute of Combinatorics and Its Applications (ICA) Fellow

Turkish Mathematical Society

Combinatorial Mathematics Society of Australasia (CMSA)

American Mathematical Society (AMS)

## CONFERENCE ORGANIZATION

Istanbul Design Theory Workshop (3-4 September 2018), Koç University, Istanbul, Turkey

3rd Istanbul Design Theory, Graph Theory and Combinatorics Conference (12-17 June 2016), Koç University, Istanbul, Turkey

2nd Istanbul Design Theory, Graph Theory and Combinatorics Conference (27 June-2 July 2011), Koç University, Istanbul, Turkey

Istanbul Design Theory and Combinatorics Conference (15-21 June 2008), Koç University, Istanbul, Turkey

National Mathematics Symposium (1-4 September 2008), Koç University, Istanbul, Turkey

## PROFESSIONAL SERVICES

**Refereed for (in alphabetical order):**

- Ars Combinatoria
- Australasian Journal of Combinatorics
- Bulletin of Institute of Combinatorics & Its Applications
- Bulletin of the Iranian Mathematical Society
- Designs, Codes & Cryptography
- Discrete Mathematics
- Graphs and Combinatorics
- Journal of Combinatorial Mathematics & Combinatorial Computing
- Journal of Combinatorial Designs
- Turkish Journal of Mathematics
- Utilitas Mathematica

**Reviewed for :**

- Mathematical Reviews

## GRADUATE THESIS SUPERVISED

**Elif Üsküplü*, MS, "***LDPC Codes from Partially Balanced Incomplete Block Designs*", Koç University 2019. (Thesis Advisor)

**Oğuz Doğan*, PH.D., "***$Q_n$-factorizations of Complete and Complete Multipartite Graphs", Koç University, 2019. (CoAdvisor)

**Oğuz Doğan*, MS,*** "*Resolvable uniform cycle systems in complete graphs*", Koç University, 2015. (Member of Thesis Committee)

**Aras Erzurumluoğlu*, MS,*** "*Intersection problems of Steiner Triple System*", Koç University, 2011. (Member of Thesis Committee)

**Fatih Demirkale, MS,** "*On minimal defining sets of full designs*", Boğaziçi University, 2009**.** (Thesis Advisor)

**Emre Kolotoğlu**, ***MS***, "*A new algorithm for finding the complete list of minimal defining sets of t-designs*", Koç University, 2007. (Thesis Advisor)

**Çiçek Güven**, ***MS,*** "*Colorings of Steiner triple systems*", Koç University, 2007. (Member of Thesis Committee)

**Emrah Ahi**, ***MS,*** "*Design and analysis of a novel buffer management model for reliable content dissemination*", Koç University, 2007. (Member of Thesis Committee)

**Güven Yücetürk**, ***MS,*** "*Group Divisible Designs*", Koç University, 2006. (Member of Thesis Committee)

## CONFERENCE PRESENTATIONS

***Attended and presented invited lecture:*** "*Embedding orthogonal partial Latin squares",* Canadian Mathematical Society 75th +1 Anniversary Summer Meeting, Designs and Codes Section, 2021, Canada, Online.

***Attended and presented invited normal lecture:*** "*Heffter Arrays and Biembbedings of Cycle Systems on Orientable Surfaces",* 8th European Congress of Mathematics, Combinatorial Designs Section, 2021, Portoroz, Slovenia, Online.

***Attended and presented:*** "*Embedding partial Latin squares into Latin squares with many mutually orthogonal mates",* Istanbul design Theory Workshop, 2018, Istanbul, Turkey.

***Attended and presented:*** "*Embedding partial Latin squares into Latin squares with many mutually orthogonal mates",* Combinatorics 2018, Arco, Italy, 2018.

***Attended and presented:*** "*High rate Low Density Parity Check Codes from Difference Covering Arrays", HyperGraphs, Graphs and Designs*, Italy, 2017.

***Attended and presented:*** "*Estimates of the coverage of parameter space by Latin Hypercube and Orthogonal sampling",* Auburn Conference on Designs, Graphs and Codes*,* Auburn University*,* Auburn, AL, USA, 2016.

***Invited serial lecture presented:*** "*Kombinatoryal Tasarım Teorisi: 1. Kısım: Latin Kareleri, 2. Kısım: Blok Tasarımları",* XXVIII. Ulusal Matematik Sempozyumu, Akdeniz University, Antalya, Turkey, 2015.

***Attended and presented:*** "*A polynomial embedding of a pair of partial orthogonal latin squares",* Antalya Algebra Days*,* Antalya 2014, Turkey.

***Invited lecture presented:*** "*A polynomial embedding of pair of partial orthogonal latin squares",* 1. Kadın Matematikçiler Çalıştayı*,* GYTE, Gebze 2014, Turkey.

***Attended:*** "The 11th Nordic Combinatorics Conference", NORCOM, Stockholm, Sweden, 2013.

***Attended and presented:*** *"The number of common flowers of two STS(v)s and embeddable Steiner triple trades"*, Combinatorics 2012, Perugia, Italy, 2012.

***Attended:*** 2nd İstanbul Design Theory, Graph Theory and Combinatorics Conference, İstanbul, Turkey, 2011.

***Attended and presented:*** *"Defining sets of combinatorial designs: An overview"*, NATO Advanced Study Institution, Information Security and Related Combinatorics, Croatia, 2010.

***Attended:*** International Workshop on Combinatorial Algorithms, Opava, Czech Republic, 2009.

***Attended and presented:*** *"Defining sets of combinatorial designs: An overview"*, BIRS Combinatorial Design Theory Workshop, Banff, Canada, 2008.

***Attended and presented:*** *"The full metamorphosis of λ-fold block designs with block size four"*, Istanbul design Theory and Combinatorics Conference, Istanbul, Turkey, 2008.

***Attended and presented:*** *"The full metamorphosis of λ-fold block designs with block size four into λ-fold kite systems"*, Combinatorics 2008, Costermano, Italy, 2008.

***Invited lecture presented:*** *"A new algorithm for finding the complete list of minimal defining sets of t-designs",* Workshop on Graph Decompositions and Related Trade Structures, University of Queensland, QLD, Australia, 2007.

***Attended and presented:*** *"A new algorithm for finding defining the complete list of minimal defining sets of t-designs"*, 21th British Combinatorial Conference, University of Reading, Reading, UK, 2007.

***Attended and presented:*** *"The full metamorphosis of λ-fold block designs with block size four into λ-fold 4-cycle systems"*, Design Theory of Alex Rosa, Bratislava, Slovakia, 2007.

***Invited lecture presented:*** *"Minimal latin ve homojen değişimler",* XIX. Ulusal Matematik Sempozyumu, Dumlupınar University, Kütahya, Turkey, 2006.

***Attended and presented****: "Combinatorial analysis of epidemic information diffusion in peer to peer networks",* Combinatorics 2006, Ischia, Italy, 2006.

***Invited lecture presented:*** *"Minimal homogeneous latin and steiner trades",* Workshop on Algebraic and Geometric Aspects of Latin Trades, Prague, Czech Republic, 2006.

***Attended and presented:*** *"Minimal homogeneous steiner trades"*, 20th British Combinatorial Conference, University of Durham, Durham, UK, 2005.

***Attended and presented:*** *"A comprehensive approach to minimal defining sets in designs"*, The 29th Australasian Conference in Combinatorial Mathematics and Combinatorial Computing (ACCMCC), Lake Taupo, New Zealand, 2004.

***Attended:*** Paul Erdös Lecture Series, University of Memphis, Memphis, TN, 2004.

***Attended and presented:*** *"The intersection problem for kite systems, kite triple systems and commutative half idempotent latin squares",* 17th Mid-West Conference on Combinatorics, Cryptography and Computing (MCCCC); University of Nevada, Las Vegas, NV, 2003.

***Attended:*** 18th Annual Clemson Mini-Conference in Graph Theory; Clemson, SC, 2003.

***Attended and presented:*** *"Metamorphism problem of 2-fold 4-cycle systems into maximum packings of 2-fold 6-cycle systems"*, 34th Annual Southeastern Conference on Combinatorics, Graph Theory, and Computing; Boca Raton, FL, 2002.

***Attended and presented:*** *"Metamorphism problem of 2-fold 4-cycle systems into maximum packings of 2-fold 6-cycle systems"*, 16th Mid-West Conference on Combinatorics, Cryptography and Computing (MCCCC); Southern Illinois University, Carbondale, IL, 2002.

***Attended:*** 33rd Annual Southeastern Conference on Combinatorics; Graph Theory, and Computing; Boca Raton, FL, 2002.

***Attended****:* 15th Mid-West Conference on Combinatorics, Cryptography and Computing (MCCCC); University of Nevada, Las Vegas, NV, 2001.

***Attended***: 32nd Annual Southeastern Conference in Combinatorics, Graph Theory, and Computing; Baton Rouge, LA, 2001.

***Attended***: 15th Annual Clemson Mini- Conference in Graph Theory; Clemson, SC, 2000.