

CURRICULUM VITAE

Selda Küçükçifçi Güllü
College of Sciences
Koç University
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Education

- Auburn University, Auburn, Alabama
 - Ph. D. in Mathematics awarded in June 2000.
- Boğaziçi University, İstanbul, Turkey
 - Master of Mathematics awarded in July 1997.
 - Bachelor of Science in Mathematics awarded in July 1995.

Area of Research

My predominant area of research is Combinatorics with primary emphasis on Combinatorial Design Theory and Graph Theory.

Academic Experience

- Prof., Koç University, İstanbul, Turkey (May 2017 – present)
- Member of Management Committee of İstanbul Center of Mathematics (IMBM) (July 2022 – present)
- Co-director of İstanbul Center of Mathematics (IMBM) (September 2019 – June 2022)
- Assoc. Prof., Koç University, İstanbul, Turkey (February 2007 – May 2017)
- Assist. Prof., Koç University, İstanbul, Turkey (September 2001 – February 2007)
- Instructor (Summer School), Boğaziçi University, İstanbul, Turkey (June 2001 – August 2001)

- Post-doc, Auburn University, Auburn, Alabama (June 2000 - August 2000, January 2001 – May 2001)
- Post-doc, Università degli Studi di Catania, Catania, Italy (September 2000 – December 2000)
- Graduate Teaching Assistant, Auburn University, Auburn, Alabama (September 1997 – June 2000)
- Graduate Teaching Assistant, Boğaziçi University, İstanbul, Turkey (September 1995 – June 1997)

University Services

- Member of Faculty Council of College of Sciences, Koç University, May 2023 – .
- Member of Library Advisory Committee, January 2019 – .
- Member of Faculty Council of College of Sciences, Koç University, August 2016 – September 2022
- Head of Mathematics Department, Koç University, August 2016 – September 2022
- Coordinator of the Department of Mathematics, Koç University, September 2019 – September 2020
- Member of Faculty Council of College of Sciences, Koç University, September 2009 – September 2015
- Coordinator of the Department of Mathematics, Koç University, September 2006 – March 2008
- Member of Koç University Press Editorial Board, December 2009 – December 2010
- ECTS coordinator for mathematics graduate program, September 2006

Awards and Honors

- Distinguished Young Scholar Award, Turkish Academy of Sciences (2006)
- Associate Professorship by Higher Education Council (2005)
- Merriwether Fellowship, Auburn University (1999 – 2000)

- Graduate Dean's Award, Auburn University (1998 – 1999)

Research Publications (For manuscripts please contact skucukcifci@ku.edu.tr)

- 37** • S. Küçükçifçi and E. Ş. Yazıcı, "Orthogonal cycle systems with cycle length less than 10", J. Combin. Des., (2023) accepted for publication.
- 36** • P. Bonacini, S. Küçükçifçi, S. Milici and E. Ş. Yazıcı, "On uniformly resolvable $(C_4, K_{1,3})$ -designs", Contrib. Discrete Math., Vol 17 No 2 (2022) 1-22.
- 35** • O. Doğan, S. Küçükçifçi and E. Ş. Yazıcı, " Q_5 -factorization of λK_n ", J. Combin. Des., Vol 28 Issue 5 (2020) 407-418.
- 34** • S. Küçükçifçi, "The full metamorphosis of λ -fold K_4 -designs into λ -fold 3-star systems", Util. Math., 110 (2019) 175-194.
- 33** • S. Küçükçifçi, C. C. Lindner, S. Özkan and E. Ş. Yazıcı, "Maximum packing of inside perfect 8-cycle systems", Australas. J. of Combin., Vol 75 (1) (2019) 146-157.
- 32** • S. Küçükçifçi, C. C. Lindner and E. Ş. Yazıcı, "Outside perfect 8-cycle systems", Australas. J. of Combin., Vol 71 (3) (2018) 476-484.
- 31** • M. Gionfriddo, S. Küçükçifçi, S. Milici and E. Ş. Yazıcı, "Uniformly resolvable $(C_4, K_{1,3})$ -designs of index 2", Contrib. Discrete Math., Vol 13, No 1 (2018) 23-34.
- 30** • S. Küçükçifçi and S. Milici, "Decomposition of λK_v into kites and 4-cycles", Ars Combin., 131 (2017) 299-319.
- 29** • F. Demirkale, D. Donovan, S. Küçükçifçi and E. Ş. Yazıcı, "Orthogonal trades and the intersection problem for orthogonal arrays", Graphs and Combinatorics, 32 No 3 (2016) 903-912.
- 28** • E. J. Billington, S. Küçükçifçi, C. C. Lindner and M. Meszka, "Squashing minimum coverings of 6-cycles into minimum coverings of triples", Aequationes Mathematicae, 89 Issue 4 (2015) 1223-1239.
- 27** • S. Küçükçifçi, S. Milici and Zs. Tuza, "Maximum uniformly resolvable decompositions of K_v and $K_v - I$ into 3-stars and 3-cycles", Discrete Math., 338 Issue 10 (2015) 1667-1673.
- 26** • S. Küçükçifçi, G. Lo Faro, S. Milici and A. Tripodi, "Resolvable 3-star designs", Discrete Math., 338 Issue 4 (2015) 608-614.
- 25** • S. Küçükçifçi, "Metamorphosis problems for graph designs", Ars Combinatoria, 113 (2014) 47-64.

- 24** • S. Küçükçifçi, G. Quattrocchi, B. R. Smith and E. Ş. Yazıcı, “On regular embedding of H-designs into G-designs”, *Util. Math.*, 92 (2013), 97-127.
- 23** • S. Küçükçifçi, “Metamorphosis problems for block designs”, *Electronic Notes in Discrete Mathematics* 40 (2013) 199-204.
- 22** • M. Gionfriddo, S. Küçükçifçi and L. Milazzo, “Balanced and strongly balanced 4-kite designs”, *Util. Math.*, 91 (2013) 121-129.
- 21** • S. Küçükçifçi, B. R. Smith and E. Ş. Yazıcı, “The full metamorphosis of λ -fold block designs with block size four into λ -fold kite systems”, *Util. Math.*, 90 (2013) 33-60.
- 20** • S. Küçükçifçi, C. C. Lindner and E. Ş. Yazıcı, “The full metamorphosis of λ -fold block designs with block size four into λ -fold triple systems”, *Ars Combinatoria*, 106 (2012) 337-351.
- 19** • S. Küçükçifçi, C. C. Lindner and E. Ş. Yazıcı, “The full metamorphosis of λ -fold block designs with block size four into λ -fold 4-cycle systems”, *Ars Combinatoria*, 104 (2012) 81-96.
- 18** • B. R. Smith, S. Küçükçifçi and E. Ş. Yazıcı, “Decomposing complete multipartite graphs into closed trails of arbitrary even lengths”, *J. Combin. Des.*, Vol 19, Issue 6 (2011) 455-462.
- 17** • M. Çağlar, Ö. Özkasap, E. Ş. Yazıcı and S. Küçükçifçi, “An analytical framework for self-organizing peer-to-peer anti-entropy algorithms”, *Performance Evaluation*, 67 (2010) 141-159.
- 16** • S. Küçükçifçi, C. C. Lindner and G. Quattrocchi, “Embeddings of P_3 -designs into bowtie and almost bowtie systems”, *Discrete Math.*, Vol 309, Issue 18 (2009) 5675-5677.
- 15** • E. J. Billington, S. Küçükçifçi, C. C. Lindner and E. Ş. Yazıcı, “Embedding 4-cycle systems into octagon triple systems”, *Util. Math.*, 79 (2009) 99-106.
- 14** • S. Küçükçifçi and G. Yüçetürk, “Maximum packing for perfect four-triple configurations”, *Discrete Math.*, 308, Issues 5-6 (2008) 753-762.
- 13** • S. Küçükçifçi, “The intersection problem for $PBD(5^*, 3)_s$ ”, *Discrete Math.*, 308, Issues 2-3 (2008) 382-385.
- 12** • Ö. Özkasap, E. Ş. Yazıcı, S. Küçükçifçi and M. Çağlar, “Exact performance measures for peer-to-peer epidemic information diffusion”, *Lecture Notes in Computer Science*, 4263 (2006) 866-876.
- 11** • E. Ş. Yazıcı, S. Küçükçifçi, M. Çağlar and Ö. Özkasap, “Exact probability distributions for peer-to-peer epidemic information diffusion”, *ACM SIGMETRICS Performance Evaluation Review*, Vol.:34, Issue 3 (2006) 6-8.

10 • S. Küçükçifçi, C. C. Lindner and C. A. Rodger, “A partial kite system of order n can be embedded in a kite system of order at most $8n+9$ ”, *Ars Combin.*, 79 (2006) 257-268.

9 • S. Küçükçifçi , “The metamorphosis of λ -fold block designs with block size four into a maximum packing of λK_n with kites”, *Util. Math.*, 68 (2005) 165-195.

8 • S. Küçükçifçi, C. C. Lindner and A. Rosa, “The metamorphosis of λ -fold block designs with block size four into a maximum packing of λK_n with 4-cycles”, *Discrete Math.*, 278, Issues 1-3 (2004) 175-193.

7 • S. Küçükçifçi and C. C. Lindner, “Perfect hexagon triple systems”, *Discrete Math.*, 279, Issues 1-3 (2004) 325-335.

6 • S. Küçükçifçi and C. C. Lindner, “Minimum covering for hexagon triples”, *Des., Codes Cryptogr.*, 32 (2004) 251-265.

5 • S. Küçükçifçi and C. C. Lindner, “The metamorphosis of λ -fold block designs with block size four into λ -fold $K_4 \setminus e$ - systems, $\lambda \geq 2$ ”, *Util. Math.*, 63 (2003) 239-254.

4 • S. Küçükçifçi and C.C. Lindner, “The metamorphosis of λ -fold block designs with block size four into λ -fold kite systems”, *J. Combin. Math. Combin. Comput.*, 40 (2002) 241-252.

3 • S. Küçükçifçi , “The number of 8-cycles in 2-factorizations of K_n minus a 1-factor, *Util. Math.*, 61 (2002) 225-237.

2 • S. Küçükçifçi, “Cycles in 2-factorizations of K_n ”, *Anadolu University Journal of Science and Technology*, Vol 3, Number 3 (2002) 413-419.

1 • S. Küçükçifçi, “The number of 8-cycles in 2-factorizations of K_n ”, *Australas. J. of Combin.*, Vol 22 (2000) 201-218.

Sponsored Research

• TUBITAK-3001, In block designs metamorphosis, conditional designs and orthogonal latin trades, 2015– 2017 (as a coordinator)

• TUBITAK-1001, Some structure problems in graph designs, April 2011– April 2014 (as a researcher)

• TUBITAK Career Project of E. Ş. Yazıcı, A secret sharing method: Defining sets in combinatorial designs, 2007– 2010 (as a researcher)

• TUBA-GEBİP, June 2006 – December 2009

• Metamorphosis of λ -fold block designs INDAM-GNSAGA Project, Italy, September 2000 – December 2000 (as a researcher)

Mathematics articles in non-academic journals

- S. Küçükçifçi, “Steiner üçlü sistemleri ve çizgeler” (Steiner triple systems and graphs), Matematik Dünyası, Vol.:13, Issue: 4 (2004) 22-27.
- S. Küçükçifçi and Sibel Özkan, “Tasarımlar” (Designs), Matematik Dünyası, Vol.:13, Issue: 4 (2004) 28-34.
- S. Küçükçifçi, “Afin ve izdüşümsel düzlemler” (Affine and projective planes), Matematik Dünyası, Vol.:13, Issue: 4 (2004) 42-46.
- S. Küçükçifçi, “Hadamard matrisleri” (Hadamard matrices), Matematik Dünyası, Vol.:13, Issue: 4 (2004) 51-54.
- S. Küçükçifçi, “Kapsayıcı ağaç sayısı” (The number of spanning trees), Matematik Dünyası, Vol.:14, Issue: 1 (2005) 46-49.
- S. Küçükçifçi and E. Şule Yazıcı, “Tasarım kuramına Peter Keevash'ın damgası”, Matematik Dünyası, Vol: 108-109 (2021).

Conference Presentations

- 4th Istanbul Design Theory Workshop, Koç University, Istanbul, September 2018. (Presentation: “Outside perfect 8-cycle systems”)
- Combinatorics 2018, Arco, Italy, June 2018. (Presentation: “Outside perfect 8-cycle systems”)
- HyGraDe2017, Sant'Alessio Siculo, Italy, June 2017. (Presentation: “Almost 2-perfect 8-cycle systems”)
- Combinatorics 2016, Università della Basilicata, Maratea, Italy, May-June 2016. (Presentation: “Uniformly resolvable $(C_4, K_{1,3})$ -designs”)
- Auburn Conference on Designs, Graphs and Codes, Auburn University, Auburn, USA, January 2016. (Presentation: “Uniformly resolvable $(C_4, K_{1,3})$ -designs of order v and index 2”)
- 23rd Workshop “3in1”, Krakow, Poland, November 2014 (invited speaker). (Presentation: “Metamorphosis problems for graph designs”)
- National Mathematics Symposium, Yeditepe University, İstanbul, Turkey, September 2014 (invited speaker). (Presentation: “Çizge tasarımları ve çözünebilir tasarımlar”)

- Combinatorics 2014, Università di Napoli Federico II, Gaeta, Italy, June 2014.
(Presentation: “Resolvable 3-star designs”)
- Combinatorics 2012, Università degli studi di Perugia, Perugia, Italy, September 2012
(invited speaker).
(Presentation: “Metamorphosis problems for graph designs”)
- Çizge Kuramı ve Uygulamaları Çalıştayı II, Boğaziçi Üniversitesi, Istanbul, Turkey, October 2011 (invited speaker).
(Presentation: “Çizge parçalanışları ve tasarımlar”)
- National Mathematics Symposium, Uludağ University, Bursa, Turkey, September 2011
(invited speaker).
(Presentation: “Çizge parçalanışları ve tasarımlar”)
- Combinatorics Conference in Lisboa, Universidade Nova de Lisboa, Lisbon, Portugal, July 2011.
(Presentation: “More on regular embedding of H-designs into G-designs”)
- Combinatorics 2010, Politecnico di Milano, Verbania, Italy, June-July 2010.
(Presentation: “On regular embedding of H-designs into G-designs”)
- Design Theory of Alex Rosa, Bratislava, Slovakia, July 2007.
(Presentation: “Embedding of 4-cycle systems into octagon triple systems”)
- Workshop on Algebraic and Geometric Aspects of Latin Trades, Prague, Czech Republic, February 2006.
(Presentation: “The intersection problem for $PBD(5^*, 3)_s$ ”)
- Combinatorics 2006, Università di Napoli “Federico II”, Seconda Università di Napoli, Ischia, Italy, June-July 2006.
(Presentation: “The full metamorphosis of λ -fold block designs with block size four into λ -fold triple systems”)
- 20th British Combinatorial Conference, University of Durham, Durham, UK, July 2005.
(Presentation: “Maximum packing for perfect four-triple configurations”)
- Statistical Physics Days, Istanbul Technical University, Istanbul, June 2004 (invited speaker).
(Presentation: “Combinatorial design theory”)
- Combinatorics 2004, Università degli studi di Catania, Acireale, Italy, September 2004.
(Presentation: “The intersection problem for $PBD(5^*, 3)_s$ ”)
- 3rd Pythagorean Conference, An Advanced Research Workshop in Geometry, Combinatorial Designs, and Cryptology, Faliraki, Rhodes, Greece, June 2003.
(Presentation: “Minimum covering for perfect hexagon triple systems, the case $\lambda=1$ ”)

- International Symposium on Graphs, Designs, and Applications, Messina, Italy, September 2003.
(Presentation: “Minimum covering for perfect hexagon triple systems, the case $\lambda=2$ ”)
- 33rd Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Florida Atlantic University, Boca Raton, Florida, March 2002.
(Presentation: “Perfect hexagon triple systems”)
- Antalya Algebra Days, Antalya, May 2002.
(Presentation: “The metamorphosis of λ -fold block designs with block size four into λ -fold kite systems”)
- Combinatorics 2002, Pianeta, Maratea, Italy, June 2002.
(Presentation: “Perfect hexagon triple systems”)
- 32nd Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Louisiana State University, Baton Rouge, Louisiana, March 2001.
(Presentation: “The metamorphosis of λ -fold block designs with block size four into λ -fold $K_4 \setminus e$ - systems, $\lambda \geq 2$ ”)
- National Mathematics Symposium, Anadolu University, Eskişehir, Turkey, September 2001
(invited speaker).
(Presentation: “Cycles in 2-factorizations of K_n ”)
- 31st Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Florida Atlantic University, Boca Raton, Florida, March 2000.
(Presentation: “The number of 8-cycles in 2-factorizations of K_n ”)

Conference Organizations

- 1st Istanbul Design Theory and Combinatorics Conference in Honor of 70th Birthday of Curt Lindner, Koç University, Istanbul, June 2008.
- 2nd Istanbul Design Theory, Graph Theory and Combinatorics Conference, Koç University, Istanbul, June 2011.
- 3rd Istanbul Design Theory, Graph Theory and Combinatorics Workshop, Koç University, Istanbul, June 2016.
- 4th Istanbul Design Theory Workshop in Honor of 80th Birthday of Curt Lindner, Koç University, Istanbul, September 2018.

Teaching Experience

The following is a list of classes I have taught at Koç University:

- EQUR 102 – Mathematics for Everyday Life
- MATH 100 – Elements of Finite Mathematics and Calculus
- MATH 101 – Finite Mathematics
- MATH 102 – Calculus
- MATH 104 – Discrete Mathematics
- MATH 106 – Calculus
- MATH 107 – Introduction to Linear Algebra
- MATH 200 – Multivariable Calculus and Matrix Algebra
- MATH 203 – Multivariable Calculus and Linear Algebra
- MATH 205 – Abstract Algebra I
- MATH 206 – Abstract Algebra II
- MATH 404 – Graph Theory
- MATH 564 – Combinatorial Design Theory
- MATH 565 – Graph Theory
- MATH 589 – Special Topics in Combinatorics

I also taught the following courses at my former institutions:

- Business Calculus
- Calculus I and II
- College Algebra
- Combinatorial Design Theory
- Graph Theory

Thesis supervised

Ph. D. Thesis:

- Oğuz Doğan, "Q_n-factorizations of complete and complete multipartite graphs", Koç University, 2019 (co-advisor: E. Ş. Yazıcı).

M. S. Thesis:

- Güven Yüçetürk, "Group divisible designs", Koç University, 2006.
- Çiçek Güven, "Coloring of Steiner triple systems", Koç University, 2007.
- Aras Erzurumluoğlu, "Intersection of Steiner triple systems", Koç University, 2011.
- Oğuz Doğan, "Resolvable cycle systems in complete graphs", Koç University, 2015.

Academic Memberships

- American Mathematical Society
- Institute of Combinatorics and its Applications (Council member between 2017-2023)

- Turkish Mathematical Society

Service as a referee

I have been refereeing articles for the following journals:

- Australasian Journal of Combinatorics
- Ars Combinatoria
- Bulletin of the ICA
- Designs Codes and Cryptography
- Discrete Applied Mathematics
- Discrete Mathematics
- Journal of Combinatorial Designs
- Journal of Statistical Planning and Inference
- Turkish Journal of Mathematics
- Utilitas Mathematica