

List of Selected Publications

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1 Graph Theory

1.1 Monographs

1. Integer Flows and Cycle Covers of Graphs, *Marcel Dekker Inc. New York.*, (1997) ISBN: 9780824797904, (379 pages). MR1426132

2. Circuit Double Covers of Graphs, *Cambridge University Press*, (2012) ISBN-13: 9780521282352, (377 pages) MR2933609

1.2 Book chapters

1. Integer flow and orientation (with H. Lai and R. Luo) In “*Topics in Chromatic Graph Theory*”, Eds. L. Beineke, R. Wilson and T. Bjarne, *Encyclopedia of Mathematics and Its Applications*, Vol. 156, Cambridge, (2015) p.181-198. ISBN: 9781107033504

2. Circuit Double Covers of Graphs In “*Graph Theory–Favorite Conjectures and Open Problems-1*” (Eds. Raluca Gera, Stephen Hedetniemi and Craig Larson) *Problem Books in Mathematics*, Springer, (2016) p273-291. ISSN: 2197-8506

1.3 Research articles

176. Rotation snark, Berge-Fulkerson conjecture and Catlin’s 4-flow reduction (with S. Liu, R. Hao) *Applied Mathematics and Computation*, 410 (2021) 126441, doi.org/10.1016/j.amc.2021.126441

174. Nowhere-zero 3-flows in toroidal graphs (with J. Li, Y. Ma, Z. Miao, Y. Shi and W. Wang) *Journal of Combinatorial Theory, B*. submitted

173. Berge-Fulkerson coloring for some families of superposition snarks (with S. Liu, R. Hao) *European Journal of Combinatorics* 96 (2021) 103344. doi.org/10.1016/j.ejc.2021.103344

170. Integer flows and modulo orientations of signed graphs (with Miaomiao Han, Jiaao Li, Rong Luo, Yongtang Shi) *SIAM J. DISCRETE MATH.* Vol. 35, No. 1, (2021) pp. 376-391; doi.org/10.1137/20M1317141

169. Circular Flows via Extended Tutte Orientations (with Jiaao Li, Yezhou Wu) *Journal of Combinatorial Theory (B)* Vol. 145 (2020) 307-322 doi.org/10.1016/j.jctb.2020.06.001
168. Berge-Fulkerson coloring for $C_{(12)}$ -linked permutation graphs (with S. Liu, R. Hao, Z. Zhang) *Journal of Graph Theory*, (2021) DOI: 10.1002/jgt.22720
165. Flows on flow-admissible signed graphs (with M. DeVos, J. Li, Y. Lu, R. Luo, Zhang Zhang) *Journal of Combinatorial Theory, B.* 149 (2021) p.198-221, arXiv: 1908.10853v2, doi.org/10.1016/j.jctb.2020.04.008
164. Flows on signed graphs without long barbells (with You Lu, Rong Luo, Michael Schubert, Eckhard Steffen) *SIAM J. DISCRETE MATH.* Vol. 34, No. 4, (2020) pp. 2166–2182; arXiv: 1908.11004v1, doi.org/10.1137/18M1222818
163. Cycle double covers and non-separating cycles (with Arthur Hoffmann-Ostenhof, Zhang Zhang) *European J. Combinatorics* Volume 81, October 2019, Pages 276-284, doi.org/10.1016/j.ejc.2019.06.006
162. Flow-contractible Configurations and Group Connectivity of Signed Graphs (with Li, J., Luo, R., and Ma, H.) *Discrete Mathematics* 341 (2018) 3227-3236. doi.org/10.1016/j.disc.2018.08.007
161. Cycle covers (III) - Compatible circuit decomposition and K_5 -transition minor (with Herbert Fleischner, Behrooz Bagheri Gh and Zhang Zhang) *Journal of Combinatorial Theory, B.* 137 (2019) 25-54. doi.org/10.1016/j.jctb.2018.11.008
160. Antimagic orientations of even regular graphs, (with Tong Li, Zi-Xia Song, Guanghui Wang and Donglei Yang) *Journal of Graph Theory* Vol. 90, No. 1 (2019) p.46-53. DOI: 10.1002/jgt.22366
159. Circuit decompositions and shortest circuit coverings of hypergraphs, (with Liying Kang, Weihua Lu, Yezhou Wu and Dong Ye) *Graphs and Combinatorics* 34(2) (2018) 365-372. doi.org/10.1007/s00373-018-1881-0
157. The flow index and strongly connected orientation, (with Jiaao Li, Carsten Thomassen and Yezhou Wu) *European J. Combinatorics* 70 (2018) 164-177, doi.org/10.1016/j.ejc.2017.12.009
156. Multiple weak 2-linkage and its applications on integer flows of signed graphs, (with You Lu and Rong Luo) *European J. Combinatorics* 69 (2018) 36-48 dx.doi.org/10.1016/j.ejc.2017.09.002
154. Counterexamples to Jaeger's Circular Flow Conjecture, (with Han, Li, Wu) *J. Comb. Theory (B)* 131 (2018) p1-11 doi.org/10.1016/j.jctb.2018.01.002
153. Signed graphs: from modulo flows to integer-valued flows, (with Jian Cheng, You Lu and Rong Luo) *SIAM J. DISCRETE MATH.* Vol. 32, No. 2, (2018) pp. 956-965. 10.1137/17M1126072
152. Vertex-coloring 3-edge-weighting of some graphs, (with Y. Wu and B. Zhu) *Discrete Math.* 340 (2017) 154-159, doi: 10.1016/j.disc.2016.08.011
150. Berge-Fulkerson coloring for $C^{(8)}$ -linked graphs, (with R. Hao and T. Zheng) *J. Graph Theory* 88 (1) (2018) p46-60 DOI: 10.1002/jgt.22184
149. Shortest circuit covers of signed graphs, (with Y. Lu, J. Cheng, R. Luo) *Journal of Combinatorial Theory, B.*, Vol. 134 (2019) P.164-178 doi.org/10.1016/j.jctb.2018.06.001
148. The 3-flow conjecture, factors modulo k , and the 1-2-3-conjecture, (with C. Thomassen, Y. Wu) *Journal of Combinatorial Theory, B.*, 121 (2016) p.308-325. dx.doi.org/10.1016/j.jctb.2016.06.010

143. Even Factors of Graphs (with J. Cheng and B. Zhu) *Journal of Combinatorial Optimization*, 33(4), (2017) p.1343-1353, DOI: 10.1007/s10878-016-0038-4
142. Vector Flows and Integer Flows (with J. Cheng, R. Luo, Y. Wang) *SIAM DM* Vol. 29, No. 4, (2015) pp. 2166-2178; DOI:10.1137/151006329
140. Unique Fulkerson coloring of Petersen minor-free cubic graphs (with Z. Miao and X. Wang) *European Journal of Combinatorics* 43 (2015) 165-171; doi:10.1016/j.ejc.2014.08.021
134. Nowhere-zero 3-Flows in Signed Graphs (with Yezhou Wu, Dong Ye and Wenan Zang), *SIAM DM* 28(3), (2014) 1628-1637; DOI:10.1137/130941687
131. A note on an extremal problem for group-connectivity (with Rong Luo, Yezhou Wu and Dong Ye), *European Journal of Combinatorics* 40 (2014) 137-141; doi:10.1016/j.ejc.2014.03.002
127. Strong Circuit Double Cover of Some Cubic Graphs (with Z. Miao and W.-L. Tang) *Journal of Graph Theory* 78 (2015) 131-142; DOI: 10.1002/jgt.21794
126. On perfect matching coverings and even subgraph coverings (with X. Hou, H.-J. Lai) *J. Graph Theory* 81 (2016) 83-91; DOI: 10.1002/jgt.21863
124. Nowhere-zero 3-flows and generalized Tutte orientations (with L. M. Lovász, C. Thomassen, Y. Wu) *Journal of Combinatorial Theory (B)*, 103 (2013) 587-598; doi:10.1016/j.jctb.2013.06.003
122. Perfect Matching Covering, Berge–Fulkerson Conjecture and Fan–Raspaud Conjecture (with W. Tang and Q. Zhu) *Discrete Applied Math* 166 (2014) 282-286; doi:10.1016/j.dam.2013.10.008
113. Cycle Double Covers and Semi-Kotzig Frame (with D. Ye) *European J. Combinatorics* 33 (2012) 624 - 631; doi:10.1016/j.ejc.2011.12.001 MR2864446
108. Kotzig frames and circuit double covers (with X.D. Zhang) *Discrete Mathematics* 312 (2012) 174-180; doi:10.1016/j.disc.2011.07.025 MR2852519
106. Cycle covers (II) – circuit chain, Petersen chain and Hamilton weights *J. Comb. Theory, B.* 120 (2016) 36-63; doi:10.1016/j.jctb.2016.04.001
99. Vertex-Coloring 2-Edge-Weighting of graphs (with H. Lu, Q. Yu) *European Journal of Combinatorics* Vol. 32 (1) (2011) p. 21-27; doi:10.1016/j.ejc.2010.08.002 MR2727456
98. Cycle covers (I) – Minimal contra pairs and Hamilton weights *J. Comb. Theory, B.* 100 (2010) 419-438; doi:10.1016/j.jctb.2010.01.001 MR2644230
97. A Characterization of Almost CIS Graphs (with Y. Wu, W. Zang) *SIAM Discrete Math.* Vol. 23, No. 2, (2009) pp. 749-753; DOI:10.1137/080723739 MR2496915
93. Flows and parity subgraphs of graphs with large odd edge connectivity, (with J. Shu and T. Zhang) *J. Comb. Theory B.* 102 (2012) 839-851; doi:10.1016/j.jctb.2012.03.002 MR2927409
90. Realizing Degree Sequences with Graphs having Nowhere-zero 3-Flows (with R. Lou, R. Xu and W. Zang) *SIAM Discrete Math.*, Vol. 22, No. 2, (2008) pp. 500-519; DOI:10.1137/070687372 MR2399362
84. Chords of longest circuits in locally planar graphs (with K. Kawarabayashi and J. Niu) *European J. Combinatorics*, 28 (2007) 315 - 321; doi:10.1016/j.ejc.2005.07.017 MR2261821
81. On flows of bidirected graphs (with R. Xu) *Discrete Math.* 299 (2005) P. 335-343; doi:10.1016/j.disc.2004.06.023 MR2168714

80. Nowhere-zero 3-flows in triangularly connected graphs , (with G. H. Fan, H. J. Lai, R. Xu, C. X. Zhou) *J. Combinatorial Theory (B)*. 98 (2008) 1325-1336; doi:10.1016/j.jctb.2008.02.008 MR2462322
79. Nowhere-zero 3-flows in products of graphs, (with J. L. Shu) *J. Graph Theory* 50 (2005) P. 79-89; DOI: 10.1002/jgt.20095 MR2157539
77. On circular flows of graphs (with Hong-Jian Lai, Rui Xu) *Combinatorica* 27 (2) (2007) p.245-246; DOI: 10.1007/s00493-007-0055-0 MR2321927
74. On structures of k -connected graphs without K_k -minor (with K. Kawarabayashi, J.-B. Niu) *European Journal of Combinatorics*, 26 (2005) P. 293-308; doi:10.1016/j.ejc.2004.01.011 MR2116173
71. Nowhere-zero 4-flows, simultaneous edge-colorings, and critical partial Latin squares, (with R. Luo, W. Zang), *Combinatorica*, 24 (4) (2004) p.641 - -657; DOI: 10.1007/s00493-004-0039-2 MR2096819
70. Chords of Longest Circuits of Graphs Embedded in Torus and Klein Bottle, (with X. Li), *J. Graph Theory*, Vol. 43 (2003) p. 1-23; DOI: 10.1002/jgt.10091 MR1974479
69. Edge-face chromatic number and edge chromatic number, (with R. Luo), *J. Graph Theory* 49: 234-256, 2005; DOI: 10.1002/jgt.20077 MR2145510
67. Circular flows of nearly eulerian graphs and vertex-splitting, *J. Graph Theory*. 40, (2002) p. 147-161; DOI: 10.1002/jgt.10040 MR1905131
63. $(2 + \epsilon)$ -coloring of planar graphs with large odd girth, (with Klostermeyer) *J. Graph Theory* 33 (2000), no. 2, 109-119; DOI: 10.1002/(SICI)1097-0118(200002)33:2;109::AID-JGT5;3.0.CO;2-F MR1734301
60. Hamilton weight and Petersen minor, (with H. J. Lai) *J. Graph Theory*, 38 (2001) p. 197-219; DOI: 10.1002/jgt.10003 MR1864921
59. Triangle-free circuit decompositions and Petersen-minor, (with K. Heinrich and J.-P. Liu) *J. Combinatorial Theory, B.*, Vol. 72 (1998) p. 197-207; doi:10.1006/jctb.1997.1808 MR1616600
55. A Note on the Connectivity of Acyclic Orientation Graphs, (with C. Savage) *Discrete Mathematics* 184 (1998) p 281-287; doi:10.1016/S0012-365X(97)00201-X MR1609342
50. Hamiltonian weights and unique 3-edge-colorings of cubic graphs, *Journal of Graph Theory*, Vol. 20, No. 1 (1995) p. 91-99; DOI: 10.1002/jgt.3190200110 MR1339684
47. Nowhere-zero 4-flows of solvable Cayley graphs, (with B. Alspach and Y. Liu), *SIAM. Discrete Math.*, Vol. 9, No. 1 (1996) pp 151-154; DOI:10.1137/S0895480193258017 MR1375421
46. On (k, d) -Colorings and Fractional Nowhere Zero Flows, (with Goddyn, Tarsi), *J. Graph Theory*, 28 (1998) 155-161; DOI: 10.1002/(SICI)1097-0118(199807) MR1626816
44. On embeddings of graphs containing no K_5 -minor, *J. Graph Theory*, Vol. 21, No. 4, (1996) 401-404; DOI: 10.1002/(SICI)1097-0118(199604)21:4;401::AID-JGT5;3.0.CO;2-T MR1377613
42. Parity subgraph, shortest cycle cover and postman tour, *SIAM J. Discrete Math.*, Vol. 6, No. 3, (1993) 428-431; DOI:10.1137/0406034 MR1229696
40. On even circuit decompositions of eulerian graphs, *J. Graph Theory*, 18, No. 1 (1994) 51-57; DOI: 10.1002/jgt.3190180106 MR1248485

39. Circuit Decompositions of Eulerian Graphs (with G. Fan) *J. Combinatorial Theory, B.*, 78 (2000) p. 1-23; doi:10.1006/jctb.1999.1923 MR1737620
38. Small circuit double covering of cubic graphs, (with H-J. Lai and X. Yu), *Journal of Combinatorial Theory, B.*, Vol. 60, No. 2, (1994) 177-194. MR1271268
35. Graphs with the circuit cover property, (with B. Alspach, L. Goddyn), *Transaction of the American Mathematics Society*, Vol. 344, No. 1, (1994) p131-154. MR1181180
33. Nowhere-zero 3-flows of highly connected graphs, (with H. J. Lai), *Discrete Mathematics*, 110 (1992) p179-183; doi:10.1016/0012-365X(92)90706-L MR1197451
32. Minimum cycle coverings and integer flows, *J. Graph Theory*, Vol. 14, No. 5, (1990) 537-546; DOI: 10.1002/jgt.3190140504 MR1073094
30. Cycle covers of cubic multigraphs, (with B. Alspach), *Discrete Mathematics*, 111, (1993) 11-17; doi:10.1016/0012-365X(93)90135-G MR1210076
28. Factorizations of regular graphs, (with Y. Zhu) *J. Combinatorial Theory, B.*, Vol. 56, No. 1 (1992) 74-89; doi:10.1016/0095-8956(92)90008-L MR1182459
27. Finding critical independent sets and critical vertex subsets are polynomial problems, *SIAM J. Discrete Math.*, Vol. 3, No. 3 (1990) 431-438; DOI:10.1137/0403037 MR1061982
26. Circumference and girth, *J. Graph Theory*, Vol. 13, No. 4, (1989) 485-490; DOI: 10.1002/jgt.3190130409 MR1010581
20. Hamilton cycles in claw-free graphs, *J. Graph Theory*, Vol. 12, No. 2, (1988) 209-216; DOI: 10.1002/jgt.3190120211 MR0940830
19. Longest cycles and their chords, *J. Graph Theory*, Vol. 11, No. 4 (1987) 521-529; DOI: 10.1002/jgt.3190110409 MR0917199
11. A class of hypergraphs satisfying an inequality of Lovász, (with W. Li), *J. Combinatorial Theory, B*, Vol. 34, No. 2 (1983) 224-228, MR0703606
8. Cycles of each length in tournaments, (with F. Tian, Z. Wu), *J. Combinatorial Theory, B*, Vol. 33, No. 3 (1982) 245-255; doi:10.1016/0095-8956(82)90044-2 MR0693364

2 Applied Mathematics (Algorithm, optimization, data mining)

2.1 Patents

1. Method for data clustering and classification by a graph theory model – network partition into high density subgraphs, (with Y. B. Ou) *US patent*, (April, 21, 2009) # 7,523,117 B2.

2.2 Research articles

175. Automatic Quasi-Clique Merger Algorithm – a Hierarchical Clustering Based on Subgraph-Density (with S. Payne, E. Fuller, G. Spirou) *Physica A, Volume 585, 1 January 2022, 126442*. DOI: 10.1016/j.physa.2021.126442, NIHMSID 1745434
167. Diffusion profile embedding as a basis for graph vertex similarity (with S. Payne, E. Fuller, G. Spirou) *Network Science*, to appear 9 (3) (2021) p.328-353, doi:10.1017/nws.2021.11

166. Edge-Cuts of Optimal Average Weights (with S. Payne, E. Fuller) *Asia-Pacific Journal of Operational Research* Vol. 36, No. 2 (2019) 1940006 DOI: 10.1142/S0217595919400062
146. Signed Quasi-clique Merger: a new clustering method for signed networks with positive and negative edges (with X. Qi, Ruth Luo, E. Fuller, Rong Luo) *International Journal of Pattern Recognition and Artificial Intelligence* Vol. 30, No. 3 (2016) 1650006 (20 pages)
144. Laplacian Energy of Digraphs and a Minimum Laplacian Energy Algorithm (with Qi, Fuller, Luo and Guo) *International Journal of Foundations of Computer Science* Vol. 26, No. 3 (2015) 367-380
141. A novel centrality method for weighted networks based on the Kirchhoff Polynomial (with Qi, Fuller, Luo) *Pattern Recognition Letters* 58 (2015) 51-60; doi: 10.1016/j.patrec.2015.02.007
139. Analyses of Crime Patterns in NIBRS Data Based on a Novel Graph Theory Clustering Method: Virginia as a Case Study (with Peixin Zhao, Marjorie Darrah, Jim Nolan), *The Scientific World Journal* Volume 2014, Article ID 492461, 8 pages; doi.org/10.1155/2014/492461
133. A Multi-dimensional and Multi-membership Clustering Method for Social Networks and Its Application in Customer Relationship Management (with Peixin Zhao, Di Wan and Xin Zhang), *Mathematical Problems in Engineering* Volume 2013, Article ID 323750, 8 pages
130. Optimal Local Community Detection in Social Networks Based on Density Drop of Subgraphs (with X. Qi, W. Tang, Y. Wu, G. Guo, E. Fuller), *Pattern Recognition Letters* 36 (2014) 46-53; doi:10.1016/j.patrec.2013.09.008
128. Spanning tree centrality: a novel centrality method for weighted networks (with Xingqin Qi, Edgar Fuller, Rong Luo, Wenliang Tang), (submitted)
120. Numerical Characterization of DNA sequence based on Dinucleotides (with Xingqin Qi, Eddie Fuller, Qin Wu) *The Scientific World Journal* 2012, Article ID 104269, 6 pages
117. Predicting glioblastoma prognosis networks using weighted gene co-expression network analysis on TCGA data (with Yang Xiang, Kun Huang) *BMC Bioinformatics* 2012, 13 (Suppl 2):S12; DOI: 10.1186/1471-2105-13-S2-S12
116. "Follow the Leader": a Centrality Guided Clustering (with Qin Wu, Xingqin Qi, Edgar Fuller) *The Scientific World Journal* Volume 2013, Article ID 368568, 9 pages; doi: 10.1155/2013/368568
115. Laplacian centrality: a new centrality measure for weighted networks (with Xingqin Qi, Edgar Fuller, Qin Wu, Yezhou Wu) *Information Sciences* 194 (2012) P. 240-253; doi:10.1016/j.ins.2011.12.027 MR2915966
114. Terrorist networks, network energy and node removal: a new measure of centrality based on Laplacian energy (with Xingqin Qi, Robert D. Duval, Edgar Fuller, Kyle Christensen, Arian Spahiu, Qin Wu, Yezhou Wu, Wenliang Tang) *Social Networking* 2013, 2, 19-31
112. The emergence of segregation in evolving social networks (with A. Henry, P. Pralat) *PNAS* vol. 108, no. 21 (2011) p. 8605-8610 MR2813308
111. A novel model for DNA sequences phylogenetic analysis based on graph theory (with X. Qi, Q. Wu, Y. Zhang, E. Fuller) *Evolutionary Bioinformatics* 2011:7 149–158
110. A new clustering method and its application in social networks (with P. Zhao) *Pattern Recognition Letters* 32 (2011) 2109-2118; doi:10.1016/j.patrec.2011.06.008

102. Graph Model for Pattern Recognition in Text (with Q. Wu, E. Fuller) (*book chapter in "Mining and Analyzing Social Networks" (eds. Ting, I.-H.; Wu, H.-J.; Ho, T.-H.) (2010) SCI 288 p. 1-20; DOI: 10.1007/978-3-642-13422-7_1*
92. A new multimembership clustering method (with Yongbin Ou) *Journal of Industrial and Management Optimization* Volume 3, Number 4, November 2007 pp. 619 – 624 MR2379871
87. Clustering, community partition and disjoint spanning trees, (with Y. B. Ou) *ACM Transactions on Algorithms*, Vol. 4, No. 3, (2008) Article 35. MR2428401