

Geir Dahl – CV (August 5, 2020)

Professor Geir Dahl

Born: May 22, 1958

Nationality: Norwegian

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Workplace:

Department of Mathematics

University of Oslo

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Education:

- Dr. Philos. (PhD), 1992, University of Oslo (mathematics: polyhedral combinatorics)
- Master of Science (Cand. Scient.), 1983, University of Oslo (mathematical statistics: analysis/probability)
- Master of Business and Adm., 1982, Norwegian Business School (BI), Oslo

Research interests: Matrix theory: combinatorial matrix theory; theory of majorization; spectral graph theory; doubly stochastic matrices; Bruhat order. Analysis: convexity; polyhedral theory; polytopes. Optimization: polyhedral combinatorics; linear and convex optimization; discrete optimization.

Employment:

- Head of Department, Dept. of Mathematics, University of Oslo, 2017 – present.
- Professor, Dept. of Mathematics, University of Oslo, 2006 – present.
- Professor, Dept. of Mathematics and Dept. of Informatics, University of Oslo, 1999–2006.

- Associate Professor, Dept. of Informatics, University of Oslo, 1994–1999.
- Lecturer, University of Oslo, 1993–1994.
- Research scientist, 1988–1994, Norwegian Telecom Research, Kjeller, Norway.
- Research scientist, 1985–1988, Institute for Energy Technology, Kjeller, Norway.

Visiting and adjunct positions:

- Adjunct scientist, The Institute of Transport Economics, Oslo, Norway, 2005–2009.
- Full-time member of Centre of Mathematics for Applications; a Research Center of Excellence, funded by The Research Council of Norway, 2003–2013.
- Visiting scientist, Sept. 2001 at the University of Rome LA SAPIENZA, Faculty of Engineering, Dept. of Operations Research.
- Visiting scientist, July–Dec. 1998 at Institute for Systems Research and R.H. Smith School of Business, University of Maryland at College Park.
- Adjunct scientist, SINTEF Applied Mathematics, Oslo, Norway, 1998–2000.
- Head of research project “Combinatorial optimization” (University of Oslo, funded by Telenor Research) 1995.
- Visiting scientist, 1-27/8 –1993 at Konrad-Zuse Zentrum für Informationstechnik, "Kombinatorische Optimierung", Berlin headed by Prof. M. Grötschel. Participated in the program "Anwendungsbezogene Optimierung und Steuerung" funded by German Research Foundation.

Project management experience, Institutional responsibilities:

- Member of faculty appointed committee on the organization of the new center in “Data Science and Computational Science”, Sept. 2019–present.

- Head of faculty appointed committee “Data Science and Computational Science”, Oct. 2018–Febr. 2019. Technical report proposing a new faculty center in these areas..
- Head of the Department of Mathematics, University of Oslo, since January 2017.
- Referee work for several journals, e.g., *Linear Algebra and Its Appl.*, *Linear and Multilinear Algebra*, *Electronic Journal of Linear Algebra*, *SIAM Journal of Matrix Analysis and Appl.*, *Discrete Mathematics*, *Discrete Applied Mathematics*, *Networks*, *Mathematical Programming*, *Graphs and Combinatorics*, etc.
- Member of the board for mathematics in UHR, the council of Norwegian Universities (Universitets og høskolerådet), 2019–present.
- Organized mini-symposia, and sessions, at a number of international conferences in linear algebra and matrix theory.
- Scientific committee for XXVII Congreso de Matematica Capricornio Universidad de Antofagasta, Chile, July 25–27, 2018.
- Head of a Faculty committee for strategic development of Data Science and Computational Science, 2018 – present.
- Head of faculty-supported continuation of the Centre of Mathematics for Applications, 2013–2016.
- International Linear Algebra Society (ILAS): ILAS Officer, journals committee.
- Editorial Advisory Board for the journal *Special Matrices*, 2016–present.
- Associate Editor of the journal *Electronic Journal of Linear Algebra* (ELA), 2015 – present. Member of ELA board.
- Associate Editor of the journal *Networks* (discrete mathematics), 2007 – present.
- Faculty program on "Computing in Science Education" (CSE) at the University of Oslo; formed a working group with Erik Bedos on the linear algebra teaching with CSE focus, 2014–2015.

- Initiated the bachelor study program “Mathematics and Economics” at the Dept. of Mathematics, University of Oslo. Head of the program committee, 2007–2013.
- Main organizer with SINTEF of the *Nordic Optimization Symposium*, University of Oslo, Oct. 18–20, 2007.
- Head of Applied and Industrial Mathematics committee at the University of Oslo, 1998–2001.

Teaching: Have lectured courses in: linear algebra; linear optimization; mathematical optimization; numerical linear algebra; multivariable calculus; optimal control theory; partial differential equations.

Master and PhD students: I have supervised approximately 30 master students and 3 Ph.D. candidates, and presently I supervise one Ph.D. student. Two of the PhDs were on grants from the Research Council of Norway. My previous three Ph.D. candidates work in research/teaching, one at the Norwegian Business School, and two at the research institution SINTEF.

Publications: 94 publications, and 70 of these registered in MathSciNet. Citations according to MathSciNet: 240. H-index: 21. There are 38 different collaborators from 14 different nationalities. Moreover, 33 of the papers are single-authored.

Invited plenary speaker: Several conferences and meetings, e.g.

- National Meeting of Mathematicians, Trondheim, Norway, 2020.
- The XXVII Congreso de Matematica Capricornio, COMCA 2018; 2018-07-25 - 2018-07-27
- International conference on Tensor, Matrix and their applications, Chern Institute of Mathematics, Nankai University, Tianjin, China, 2016.
- SIAM Applied Linear Algebra, Atlanta, USA, 2016 (ILAS invited speaker)
- ALAMA-GAMM/ANLA-meeting matrix analysis 2014, Barcelona (ILAS invited speaker)

List of publications:

1. L. Ciardo, G. Dahl, S. Kirkland, On Kemeny's constant for trees with fixed order and diameter, *Linear and Multilinear Algebra ...* (2020),
2. R.A. Brualdi, G. Dahl, Permutation matrices, their discrete derivatives and extremal properties, *Vietnam Journal of Mathematics*, Springer, 2020.
3. R.A. Brualdi, G. Dahl, Alternating sign matrices – extensions, König-properties, and primary sum-sequences. *Graphs and Combinatorics*, 36 (2020), 63–92.
4. G. Dahl, A. Guterman, P. Shteyner. Majorization for $(0,1)$ -matrices. *Linear Algebra Appl.* 585 (2019), 147–163
5. E. Andrade, L. Ciardo, G. Dahl. Combinatorial Perron Parameters for Trees, *Linear Algebra Appl.* 566 (2019), 138-166.
6. E. Andrade, G. Dahl, L. Leal, M. Robbiano. New bounds for the signless Laplacian spread. *Linear Algebra Appl.* 566 (2019), 98–120.
7. G. Dahl, A. Guterman, P. Shteyner. Majorization for matrix classes. *Linear Algebra Appl.* 555 (2018), 201–221.
8. R.A. Brualdi, G. Dahl, Alternating Sign Matrices, Related $(0, 1)$ -Matrices, and the Smith Normal Form. *Linear Algebra Appl.*, 568, 2019, 10–28.
9. R.A. Brualdi, G. Dahl, The interval structure of $(0,1)$ -matrices, *Discrete Applied Mathematics*, 266 (2019), 3–156.
10. R.A. Brualdi, G. Dahl, Alternating Sign Matrices and Hypermatrices, and a Generalization of Latin Squares. *Advances in Applied Mathematics*, Volume 95, April 2018, Pages 116–151.
11. A. Agra, G. Dahl, T. Haufmann, S. Pinheiro, The k -regular induced subgraph problem, *Discrete Applied Mathematics*, 222 (2017), 14–30.
12. E. Andrade, G. Dahl, Combinatorial Perron values of trees and bottleneck matrices. *Linear and Multilinear Algebra*, 65 (2017), No. 12, 2387–2405.
13. R.A. Brualdi, G. Dahl, Alternating sign matrices, extensions and related cones. *Advances in Applied Mathematics*, 86 (2017), 19–49.

14. R.A. Brualdi, G. Dahl, E. Fritscher, Doubly stochastic matrices and the Bruhat order. *Czechoslovak Mathematical Journal*, 66 (141) (2016), 681–700.
15. G. Dahl, T.A. Haufmann, Zero-one completely positive matrices and the $A(R, S)$ classes. *Special Matrices*, 2016, Volume 4, Issue 1. Pages 296–304.
16. Luis A. Barragán, G. Dahl, Alberto Domínguez, Arantxa Otín, Zero sum sign-central matrices and applications, *Linear Algebra Appl.* 505 (2016), 109–125.
17. R.A.Brualdi, G.Dahl, Strict sign-central matrices, *SIAM Journal on Matrix Analysis and Applications.* 36 (No.3) (2015), 1202–1220.
18. G. Dahl, L -rays of permutation matrices and doubly stochastic matrices, *Linear Algebra Appl.* 480 (2015), 127–143.
19. G. Dahl, The Laplacian energy of threshold graphs and majorization, *Linear Algebra Appl.*, 469 (2015), 518–530.
20. M. Charina, G. Dahl, Subdivision schemes, network flows and linear optimization. *Advances in Computational Mathematics*, 41 (2015), 507–528.
21. N.Abreu, L.Costa, G. Dahl, E.Martins, The skeleton of acyclic Birkhoff polytopes, *Linear Algebra Appl.*, 457 (2014), 29–48.
22. M. Charina, G. Dahl, Subdivision schemes, network flows and linear optimization, *Advances in Computational Mathematics*, to appear, 2014
23. G.Dahl, “A note on majorization transforms and Ryser’s algorithm”, *Special Matrices*, 1, 2013, p. 17–24.
24. R.A.Brualdi, G.Dahl, “Majorization for partially ordered sets”, *Discrete Mathematics*, 313 (22), 2013, p. 2592–2601.
25. G.Dahl, F.Zhang, “Integral majorization polytopes”, *Discrete Mathematics, Algorithms and Applications*, 5 (3), (2013).
26. G. Dahl, “Martingale matrix classes and polytopes”, *Linear Algebra and its Appl.*, 437 (2012), 1722–1733.

27. R.A.Brualdi, G.Dahl, “An extension of the polytope of doubly stochastic matrices”, *Linear and Multilinear Algebra*, 61 (3) (2013), p.393–408.
28. N. Bebiano, G. Dahl, J.D. da Silva, C.M. da Fonseca, Preface to the Proceedings of the Coimbra Meeting on 0-1 Matrix Theory and Related Topics, *Linear Algebra and its Applications*, 2012 ;Volum 436.(4) p. 789–790.
29. G. Dahl, “A matrix-based ranking method with application to tennis”, *Linear Algebra and its Appl.*, 437 (2012), 26–36.
30. R.A.Brualdi, G.Dahl, “Majorization classes of integral matrices”, *Linear Algebra and its Appl.*, 436 (2012), 802–813.
31. G. Dahl, “Polytopes related to interval vectors and incidence matrices”. *Linear Algebra and Its Appl.*, Vol. 435 (11), p. 2955–2960, 2011.
32. F.E. Benth, G. Dahl and C. Mannino, “Computing optimal recovery policies for financial markets”. *Operations Research.* (2012), Volum 60.(6), p. 1373–1388.
33. G. Dahl, “Majorization permutahedra and $(0, 1)$ -matrices”. *Linear Algebra and Its Appl.*, Volume 432, Issue 12, 1, July 2010, Pages 3265-3271.
34. G. Dahl and H. Minken, “A note on permutations and rank aggregation”. *Mathematical and computer modelling*, Volume 52.(1-2), 2010, p. 380-385.
35. G. Dahl, “Disjoint congruence classes and a timetabling application.” *Discrete Applied Mathematics*, 2009 ;Volum 157. s. 1702-1710.
36. G. Dahl, “Majorization and network problems”. Proceedings INOC2009 (Int. network optimization conference), Pisa, April 26–29, 2009.
37. G. Dahl, “Permutation matrices related to Sudoku”. *Linear Algebra and its Appl.*, Volume 430, Issues 8-9, 15 April 2009, Pages 2457-2463 2008.
38. M.O. Ball, G. Dahl, and T. Vossen, “Matchings in Connection with Ground Delay Program Planning”. *Networks*, 2009 ;Volum 53.(3) p. 293-307.

39. G. Dahl, "Transportation matrices with staircase patterns and majorization". *Linear Algebra and Its Applications*, Volume 429, Issue 7, 1 October 2008, Pages 1840-1850.
40. G. Dahl, "Combinatorial properties of Fourier-Motzkin elimination", *Electronic Journal of Linear Algebra*, 16 (2007), 334–346.
41. G. Dahl and T. Flatberg, "An Integer Programming Approach to Image Segmentation and Reconstruction Problems". In *Geometric Modelling, Numerical Simulation, and Optimization: Applied Mathematics at SINTEF*: Springer Publishing Company 2007, p.461-481.
42. G. Dahl, "Majorization and distances in trees". *Networks*, Vol. 50 (Issue 4) 2007, 251–257.
43. G. Dahl, "A note on a parameter relating traffic equilibria and system optimal routing", *Applied Mathematics and Computation*, 191 (2007) 445–450.
44. R.A. Brualdi and G. Dahl, "The Bruhat shadow of a permutation matrix", 2006. Chapter in "Mathematical papers in honour of Eduardo Marques de Sa", Universidade de Coimbra, Departamento de Matematica, 2006. ISBN 978-972-8564-43-8.
45. G. Dahl and H. Minken, "Methods based on discrete optimization for finding road network rehabilitation strategies", *Computers and Operations Research*. Volum 35 (Nr.7) 2008, p. 2193-2208.
46. G. Dahl and N. Foldnes, "LP based heuristics for the multiple knapsack problem with assignment restrictions". *Annals of Operations Research*, Volume 146, Number 1 (September), 2006, p. 91–104.
47. G. Dahl, J.M. Leinaas, J. Myrheim, E. Ovrum, "A tensor product matrix approximation problem in quantum physics". *Linear Algebra and Its Applications*, Vol. 420 (2007) 711-725. (Technical report, Department of Mathematics, University of Oslo, Pure Mathematics No. 3, ISSN 0806–2439 February 2006.
48. R.A. Brualdi and G. Dahl, "Constructing $(0,1)$ -matrices with given line sums and certain fixed zeros". In *Advances in Discrete Tomography and Its Applications*, Eds.: Herman, G.T., Kuba, A., Birkhäuser, Boston (2007).

49. R.A. Brualdi and G. Dahl, "Matrices of zeros and ones with given line sums and a zero block", *Electronic notes in discrete mathematics*, Vol. 20 (2005), 83–97.
50. G. Dahl and T. Flatberg, "A remark concerning graphical sequences", *Discrete Mathematics*, Volume 304, Issues 1-3, 28 November 2005, Pages 62-64.
51. G. Dahl and T. Flatberg, "Optimization and Reconstruction of hv-convex (0,1)-matrices", *Discrete Applied Mathematics*, 151 (2005), 93-105. (Prelim. version published in *Electronic Notes in Discrete Mathematics*, Volume 12, March 2003).
52. G. Dahl, D. Huygens, A.R. Mahjoub and P. Pesneau, "On the k edge-disjoint 2-hop-constrained paths polytope", *Oper. Res. Letters*, 2006, Vol. 34 (5): p.577-582.
53. G. Dahl and T. Flatberg, "An integer programming approach to image segmentation and reconstruction problems", 2004. Submitted.
54. G. Dahl, "A method for approximating symmetrically reciprocal matrices by transitive matrices", *Linear Algebra and Its Applications*, Vol. 403 (2005), 207–215.
55. G. Dahl, L. Gouveia and C. Requejo, "On formulations and methods for the hop-constrained spanning tree problem", In *Handbook of Optimization in Telecommunications*, Resende, Mauricio G.C.; Pardalos, Panos M. (Eds.), Springer, 2006.
56. G. Dahl, T. Flatberg, N. Foldnes and L. Gouveia, "The Jump Formulation for the Hop-Constrained Minimum Spanning Tree Problem", Febr. 2004. Submitted.
57. G. Dahl and T. Flatberg, "Reconstructing (0,1)-matrices from projections using integer programming". *Computational Optimization and Applications*, (2009) 42: 141–154.
58. G. Dahl, "Tridiagonal doubly stochastic matrices", *Linear Algebra and Its Applications*, Vol. 390 (2004), 197–208.
59. G. Dahl, N. Foldnes and L. Gouveia, A note on hop-constrained walk polytopes, *Operations Research Letters* 32 (2004), no. 4, 345–349.

60. G. Dahl and T. Flatberg, "Optimization and Reconstruction of hv-convex (0,1)-matrices", *Electronic Notes in Discrete Mathematics*, Volume 12, March 2003.
61. G. Dahl, "A note on linear discrepancy", *Electronic Journ. of Linear Algebra*, Vol. 10 (2003), 77–80.
62. R.A. Brualdi and G. Dahl, "Matrices of zeros and ones with given line sums and a zero block", *Linear Algebra and Its Applications*, Vol. 371 (2003), 191–207.
63. G. Dahl, "The doubly graded matrix cone and Ferrers matrices", *Linear Algebra and Its Applications*, Vol. 368 (2003), 171–190.
64. G. Dahl and N. Foldnes, "Complete description of a class of knapsack polytopes", *Operations Research Letters*, Vol.31 (2003), 335–340.
65. G. Dahl and T. Flatberg, "Some constrained partitioning problems and majorization", *European Journal of Operational Research*, Vol. 158 (2) (2004), 434–443.
66. G. Dahl and B. Johannessen, "The 2-path network problem", *Networks* 43, No.3, 190-199 (2004).
67. G. Dahl and L. Gouveia, "On the directed hop-constrained shortest path problem", *Operations Research Letters* 32 (2004), pp 15–22.
68. R.A. Brualdi and G. Dahl, "Majorization-Constrained Doubly Stochastic Matrices". *Linear Algebra and Its Applications*, Vol.361, 75–97, 2003.
69. G. Dahl, "Principal majorization ideals and optimization". *Linear Algebra and Its Applications*, Vol.331, 113–130 2001.
70. G. Dahl, G. Storvik and A. Fadnes, "Large-scale integer programs in image analysis". *Operations Research*, Vol. 50 (2002), No. 3, 490–500.
71. G. Dahl and B. Realfsen, "The cardinality-constrained shortest path problem in 2-graphs". *Networks*, Vol. 36 (1), 1–8, 2000.
72. G. Dahl, "A note on diagonally dominant matrices". *Linear Algebra and Its Applications*, Vol. 317, 217–224, 2000.
73. G. Dahl, "An introduction to convexity", Report 279 (ISBN 82-7368-227-7), Department of Informatics, University of Oslo, Jan., 2000.

74. G. Dahl, "Majorization polytopes". *Linear Algebra and Its Applications*, Vol. 297, 157–175, 1999.
75. G. Dahl, "Matrix majorization". *Linear Algebra and Its Applications*, Vol. 288, 53–73, 1999.
76. G. Dahl, "Notes on polyhedra associated with hop-constrained paths", University of Oslo, Institute of Informatics. *Operations Research Letters* Vol. 25 (1999) 97–101.
77. G. Dahl, "The 2-hop spanning tree problem". *Operations Research Letters* Vol.23 (1998) 21–26.
78. G. Dahl, "Stable set polytopes for a class of circulant graphs". *SIAM Journal on Optimization*, Vol.9, No.2, 493–503, 1999.
79. S. Holm, B. Elgetun and G. Dahl, "Weight- and layout-optimized sparse arrays". Proc. Int. Workshop on Sampling Theory and Applications, Aveiro, Portugal, pp. 97-102, June 1997.
80. G. Dahl, "Majorization, polyhedra and statistical testing problems". *Linear Algebra and Its Applications*, Vol. 272, 205–225, 1998. (See Report 240, Feb. 1997, University of Oslo, Institute of Informatics.)
81. S. Holm, B. Elgetun and G. Dahl, "Properties of the beampattern of weight- and layout-optimized sparse arrays". *IEEE Trans. on ultrasonics, ferroelectrics and frequency control*, Vol. 44, No. 5, 983–992, 1997.
82. G. Dahl, "Polytopes related to the l_∞ -distance between vectors". *Operations Research Letters* Vol. 22 (1998) 49–54.
83. G. Stovrik and G. Dahl, "Lagrangian based methods for finding MAP solutions for MRF models". *IEEE Transactions on Image Processing*, Volume 9, No. 3, 469–479 (2000).
84. G. Dahl, A. Martin and M. Stoer, "Routing through virtual paths in layered telecommunication networks", *Operations Research*, Vol. 47, No. 5, 1999. (see also Technical report, Telenor Research, FoU N78/95, Dec. 1995).
85. G. Dahl and F. Margot, "Weak k-majorization and polyhedra", *Mathematical Programming*, Vol.81 (1998), No.1, 37–53.

86. G. Dahl and M. Stoer, "A cutting plane algorithm for multicommodity survivable network design problems", *INFORMS Journal on Computing*, 10(1), Winter 1998, 1–11. (see also Preprint 3, Institute of Informatics, Apr. 1995.)
87. G. Dahl, "An introduction to convexity, polyhedral theory and combinatorial optimization". *Komp.* 67, Jan. 1996, Institute of Informatics, University of Oslo.
88. G. Dahl, "Polyhedra and optimization in connection with a weak majorization ordering. University of Oslo, Institute of Informatics, Preprint 10, Dec. 1994.
89. G. Dahl, "Polyhedra and optimization in connection with a weak majorization ordering". Springer *Lecture Notes in Computer Science*, Vol. 920, Integer programming and combinatorial optimization, (Ed. Balas and Clausen), Springer, 1995.
90. G. Dahl, K. Jörnsten, A. Løkketangen, "A tabu search approach to the channel minimization problem", *Proceedings ICOTA'95, Int. conference on optimization techniques and applications*, Chengdu, China, June 1995.
91. G. Dahl, K. Jörnsten, G. Løvnes and S. Svaet: "Graph Optimization Problems in Connection with the Management of Mobile Communications Systems", *Telecommunication Systems* 3 (1995) (319-339).
92. G. Dahl, "The design of survivable directed networks", *Telecommunication Systems* 2 (1994) 349-377.
93. M. Stoer and G. Dahl, "A polyhedral approach to multicommodity survivable network design", *Numerische Mathematik* 68 (1), 1994, 149-168.
94. G. Dahl, "Directed Steiner Problems with Connectivity Constraints", *Discrete Applied Mathematics* 47 (1993), 109-128.
95. G. Dahl, "Some telecommunications network design problems and the bi-Steiner problem", NATO ASI Series, Vol. F 82, *Combinatorial Optimization*, (ed. M. Akgül et al.), Springer-Verlag Berlin-Heidelberg, 1992.

96. G. Dahl, "Contributions to the design of survivable directed networks", Dr. Philos. thesis, University of Oslo, Faculty of Mathematics. Also printed as Norwegian Telecom Research, TF R 48/91 (ISBN 82-423-0194-8).

Technical reports:

1. G. Dahl, K. Rognlien Dahl, "Linear optimization and mathematical finance", Dept. of Math./CMA, University of Oslo, Series in Pure Mathematics, No. 05, August 2012.
2. G. Dahl, "Grafteori og optimering - en kort innføring". (In Norwegian.) Department of Mathematics, University of Oslo, Oct. 2001.
3. G. Dahl and B. Johannessen, "The 2-path network design problem". University of Oslo, Institute of Informatics. Report 292. Nov 2000. (Submitted)
4. G. Dahl, "A note on nonnegative diagonally dominant matrices". University of Oslo, Institute of Informatics. Report 269. April 1999.
5. G. Dahl, G. Storvik and A. Fadnes, "Large-scale integer programs in image analysis". University of Oslo, Institute of Informatics. Report 262. May 1998.
6. G. Dahl, "Polytopes related to some polyhedral norms". University of Oslo, Institute of Informatics. Report 226, Nov. 1996.
7. G. Dahl og G. Hasle, "Transportoptimering". SINTEF/Applied Mathematics, Oslo, Report STF42 A9622, Dec. 1996.
8. A. Eilertsen, R. Nylund, A. Solem og G. Dahl, "En matematisk optimeringsmodell og algoritmer for lokalisering av svitsjer i telenett", Norwegian Telecom Research, TF-notat N 19/94.
9. G. Dahl, "The design of survivable directed networks", Norwegian Telecom Research, TF R 8/94.
10. G. Dahl and M. Stoer, "A polyhedral approach to multicommodity survivable network design", Konrad-Zuse Zentrum, Berlin, SC 93-20, Aug. 1993.

11. G. Dahl and M. Stoer, "MULTISUN - mathematical model and algorithms", Norwegian Telecom Research, TF R46/92.
12. G. Dahl, K. Jörnsten, G. Løvnes and S. Svaet, "Graph Optimization Problems in Connection with the Management of Mobile Communications Systems", Norwegian Telecom Research, TF R 48/92.
13. G. Dahl, "The design of survivable directed networks", Norwegian Telecom Research, TF-notat N 10/92.
14. G. Dahl, "Directed Steiner problems with connectivity constraints", Norwegian Telecom Research, TF-notes N42/90.
15. G. Dahl, "The bi-Steiner problem", Norwegian Telecom Research, TF-notes N11/90.
16. G. Dahl, Ø. Eriksen, R. Lorentzen, R. Nilsen, L. Skår, "Cable-TV - an optimization tool for design of cable television networks", Norwegian Telecom Research, TF-notes N1/90.
17. G. Dahl, R. Lorentzen, R. Nilsen, "The W-technique for resolving degeneracy in LP problems", Norwegian Telecom Research, TF-notes N7/90.
18. G. Dahl et al., technical reports on e.g. optimization models and algorithms in oil/gas transportation networks, 1984-1988, Institute for Energy Technology, Kjeller, Norway.
19. G. Dahl, "Pseudo-experiments and Majorization". Statistical Research report, Department of Mathematics, University of Oslo, No. 11, 1984, University of Oslo.

Conference presentations and lectures:

1. Dahl, Geir. Majorization - some recent developments in matrix theory. Mathematics seminar; 2019-10-28 - 2019-10-28 UiO
2. Dahl, Geir; Brualdi, R.A.; Guterman, Alexander; Shteyner, Pavel. Matrix covering problems. International linear algebra society ILAS 2019; 2019-07-08 - 2019-07-12
3. Brualdi, R.A.; Dahl, Geir. Matrix covering and A-interval matrices. IMAME 2019, International no Meeting on Applied Mathematics & Evolution; 2019-04-16 - 2019-04-18

4. Andrade, Enide; Dahl, Geir; Leal, Laura; Robbiano, Maria. New bounds for the signless Laplacian spread. IMAME 2019, International no Meeting on Applied Mathematics & Evolution; 2019-04-16 - 2019-04-18
5. Dahl, Geir; Brualdi, R.A., Alternating Sign Matrices, Polyhedra and Majorization. The XXVII Congreso de Matematica Capricornio, COMCA 2018; 2018-07-25 - 2018-07-27. Invited plenary talk.
6. Andrade, Enide; Ciardo, Lorenzo; Dahl, Geir. Combinatorial Perron Parameters and Trees. The XXVII Congreso de Matematica Capricornio, COMCA 2018; 2018-07-25 - 2018-07-27.
7. Dahl, Geir. Laplacian energy, threshold graphs and majorization. International linear algebra society ILAS 2017; 2017-07-24 - 2017-07-28
8. Brualdi, R.A.; Dahl, Geir. Alternating sign matrices and polyhedra. ASGAR 2017; 2017-04-26 - 2017-04-27. UiO
9. Andrade, Enide; Dahl, Geir. Combinatorial Perron values. ILAS Int. Linear Algebra Society 2016; 2016-07-11 - 2016-07-15 UiO
10. Andrade, Enide; Dahl, Geir. Combinatorial Perron values. Seminar Department of Mathematics, University of Aveiro; 2016-10-12 - 2016-10-12 UiO
11. G. Dahl, Some Topics in Combinatorial Matrix Theory, International conference on Tensor, Matrix and their applications, Chern Institute of Mathematics, Nankai University, Tianjin, China, May 2016.
12. G. Dahl, Combinatorial Matrix Theory and Majorization, 2015 SIAM Conference on Applied Linear Algebra, Atlanta, Oct. 26-30, 2015.
13. G. Dahl, Permutation matrices, doubly stochastic matrices and their L -rays. MatTriad 2015 (Matrix theory), University of Coimbra, Portugal, 7–11. Sept., 2015.
14. S. Pinheiro, G. Dahl, T.A. Haufmann, A. Agra, The k -regular induced subgraph problem for $k=1,2$. MatTriad 2015 (Matrix theory), University of Coimbra, Portugal, 7–11. Sept., 2015.
15. T.A. Haufmann, G. Dahl, A. Agra, S. Pinheiro, Maximal Induced k -regular Subgraphs. 22nd Int. Symposium on Mathematical Programming, Carnegie Mellon University and University of Pittsburgh, 12–17 July, 2015.

16. G. Dahl, Traveling Salesman Problem: En matematisk rundtur. Faglig-pedagogisk dag; 2014-10-30
17. G. Dahl, R.A. Brualdi, Majorization for partially ordered sets. ILAS (International Linear Algebra Society) 2014; 2014-08-06 - 2014-08-09
18. G. Dahl, Majorization and combinatorial matrix theory. ALAMA-GAMM/ANLA-meeting matrix analysis 2014, Barcelona (ILAS invited speaker); 2014-07-14 - 2014-07-16
19. T.A. Haufmann, G. Dahl, Optimization and classes of completely positive matrices. International Symposium on Combinatorial Optimization (ISCO2014); 2014-03-05 - 2014-03-07
20. G. Dahl, Nytt Munch museum: et SKRIK etter kombinatorikk og geometri!! Faglig pedagogisk dag UiO; 2013-10-31
21. G. Dahl, An introduction to Majorization: theory and applications. A course given at the Federal University of Rio de Janeiro; 2013-10-15 - 2013-10-17.
22. G. Dahl, "Majorization transforms and Ryser's algorithm", International Linear Algebra Society ILAS 2013; 2013-06-03 - 2013-06-07.
23. G. Dahl, R.A. Brualdi, "Generalized Birkhoff polytopes and majorization", 21. International Symposium on Mathematical Programming, TU-Berlin, Berlin, August 19-24, 2012
24. R.A. Brualdi, G. Dahl, "An extension of the polytope of doubly stochastic matrices", SIAM conference on Applied Linear Algebra, Valencia, June 18-22, 2012.
25. G. Dahl, "Lineær algebra, Google og rangering av websider", Lecture, Høgskolen i Telemark, March 20, 2012.
26. G. Dahl, "Majorization, matrix polytopes and combinatorics", Lecture, Høgskolen i Telemark, March 20, 2012.
27. G. Dahl, "Google: hvordan man blir styrtrik på en matematisk likning!", Åpen dag, Universitetet i Oslo, March 8, 2012.
28. G. Dahl, "Kombinatorikk på roterommet!", Faglig-pedagogisk dag 2011, University of Oslo, Oct. 27, 2011.

29. G. Dahl, "Majorization in matrix theory: a brief introduction and some recent progress.", Seminar, University of Maryland; Oct. 7, 2011.
30. G. Dahl, "Martingale matrix classes", ILAS2011 (International linear algebra society), Aug. 22-226, 2011.
31. G. Dahl, "Majorization and related combinatorial matrix classes", Invited talk, Institute of Systems Research, University of Maryland, College Park, Oct. 5, 2010.
32. G. Dahl, "Majorization permutahedra and (0,1)-matrices." ILAS2010, 16th conference of the International Linear Algebra Soc.; June 21–25, 2010. Pisa, Italy.
33. G. Dahl, "Majorization, $A(R,S)$ and related matrix classes." Coimbra Meeting on 0-1 Matrix Theory and Related Topics, June 17–19, 2010. Coimbra, Portugal.
34. G. Dahl, "Disjoint congruence classes and an optimization problem", *Nordic Optimization Symp.*, KTH, Stockholm, March 13–14, 2009.
35. G. Dahl, "Introduction to optimization and convexity", eVITA Winter school 2009 Optimization, Geilo, Norway, Jan.11–16, 2009. Invited talk.
36. G. Dahl, "Majorization in matrix theory: a brief introduction.", CMA - Combinatorial optimization seminar, Dec. 12, 2008.
37. G. Dahl, "Minimum cuts: theory and algorithms". CIPR-CMA Workshop on fast level set methods with application to segmentation and shape identification. Bergen, Jan. 17–18, 2008. Invited talk.
38. G. Dahl and R.A. Brualdi, "Some Combinatorial Matrix Problems and Discrete Tomography", *Nordic Optimization Symp.*, University of Oslo, Oct. 18–20, 2007.
39. G. Dahl and R.A. Brualdi, "Some Combinatorial Matrix Problems and Discrete Tomography", Invited talk, Institute of Systems Research, University of Maryland, College Park, Oct. 1, 2007.
40. R.A. Brualdi and G. Dahl, "Constructing (0,1)-matrices with given line sums and certain fixed zeros", *ILAS 2006 (Int. Linear Algebra Soc.)*, July 18–21, 2006, Amsterdam.

41. T. Flatberg and G. Dahl, “An integer programming approach to image segmentation and reconstruction problems”, Euro XXI, July 2–5, 2006, Reykjavik, Iceland.
42. G. Dahl, J.M. Leinaas, J. Myrheim and E. Ovrum, “A tensor product matrix approximation problem in quantum physics, Invited talk at *Trends in Mathematics for Applications*, CMA, University of Oslo, June 19-20, 2006.
43. L. Gouveia, G. Dahl, T. Flatberg and N. Foldnes, “The Jump Formulation for the Hop-Constrained Minimum Spanning Tree Problem”, INFORMS, The 8th INFORMS Telecommunications Conference, Dallas, USA, March 30 . April 2, 2006.
44. R.A. Brualdi and G. Dahl, “Matrices of zeros and ones with given line sums and a zero block”, *Workshop in Discrete Tomography and Its Applications*, June 13–15, 2005, New York.
45. G. Dahl, “A method for approximating symmetrically reciprocal matrices by transitive matrices”, Nordic Mathematical Prog. Society Conference, Linköping, Sweden, Oct. 22-23, 2004.
46. N. Foldnes and G. Dahl, “A randomized algorithm for the multiple knapsack problem with assignment restrictions”, International Network Optimization Conference, October 27-29, 2003, Evry/Paris, France.
47. G. Dahl, “Matrices of zeros and ones and a zero block”, *18th International Symposium on Mathematical Programming*, Copenhagen, Denmark, August 18-22, 2003.
48. G. Dahl, N. Foldnes and L. Gouveia, “On hop-constrained walk polytopes”, *18th International Symposium on Mathematical Programming*, Copenhagen, Denmark, August 18-22, 2003.
49. G. Dahl and T. Flatberg, “Reconstructing (0,1)-matrices using Lagrangian decomposition”, *18th International Symposium on Mathematical Programming*, Copenhagen, Denmark, August 18-22, 2003.
50. G. Dahl and T. Flatberg, “Reconstructing hv-convex (0,1)-matrices by optimization methods”, 9th International Workshop on Combinatorial Image Analysis, May 14-16, 2003, Palermo, Italy.
51. G. Dahl, “Majorization and optimization”, Nordic Mathematical Prog. Society Conference, Bergen, Norway, Sept. 20, 2002.

52. G. Dahl and T. Flatberg, “Discrete tomography and optimization”, Nordic Mathematical Prog. Society Conference, Bergen, Norway, Sept. 21, 2002.
53. G. Dahl and N. Foldnes, “Complexity of certain multiple knapsack problems”, Nordic Mathematical Prog. Society Conference, Bergen, Norway, Sept. 20, 2002.
54. G. Dahl and N. Foldnes, “Polyhedral Properties of certain 0/1 Knapsack Polytopes”, IFORS 2002 (Int. operations research conf.), Edinburgh, Scotland, July 8–12, 2002.
55. G. Dahl and T. Flatberg, “Some partitioning problems and majorization”, IFORS 2002 (Int. operations research conf.), Edinburgh, Scotland, July 8–12, 2002.
56. G. Dahl, “Principal majorization ideals and optimization”, Invited lecture at the 10th International Linear Algebra Society Conference, Auburn, Alabama, USA, June 10–13, 2002.
57. G. Dahl, “Integer programs in image analysis”, Invited lecture at the University of Rome, Sept. 26, 2001.
58. R.A. Brualdi and G. Dahl, “Majorization-Constrained Doubly Stochastic Matrices”, 9th International Linear Algebra Society Conference, Haifa, Israel, June 25-29, 2001.
59. G. Dahl, “The 2-path network design problem and majorization”. Invited lecture at “Optimization and simulation in telecommunications networks”, University of Rome, May 3-5, 2001.
60. G. Dahl and L. Gouveia, “Generalizing cut inequalities for hop-constrained network design problem”, INFORMS International, Maui, Hawaii, USA, June 17–20, 2001.
61. G. Dahl, “Dobbeltstokastiske matriser, polytoper og majorisering”. Invited lecture at the annual meeting of The Norwegian Mathematical Society, University of Oslo, March 29, 2001.
62. G. Dahl, “The 2-path network design problem”, *17th International Symposium on Mathematical Programming*, Atlanta, August 7–11, 2000.
63. G. Dahl, “Moderne optimering - mer enn å derivere !!” (in Norwegian). Foredrag ved Faglig-pedagogisk dag, Universitetet i Oslo, 4. jan., 2000.

64. G. Dahl, "Large-scale integer programs in image analysis", *Sixth SIAM Conference on Optimization*, Atlanta, May 10-12, 1999.
65. G. Dahl, G. Storvik and A. Fadnes, "Large-scale integer programs in image analysis", presentation at Matematisches Forschungsinstitut Oberwolfach, Jan. 13., 1999.
66. G. Dahl, "Integer programs in image analysis". Seminar talk at R.H.Smith School of Business, University of Maryland at Collge Park, Dec. 6, 1998.
67. G. Dahl, "Stable set polytopes for a class of circulant graphs and application to the 2-hop spanning tree problem". *Combinatorial Optimization '98*, Universit  Libre de Bruxelles, April 15-17, 1998.
68. G. Dahl, "Some stable set polytopes and the 2-hop spanning tree problem". Invited talk at University of Link ping, Inst. of Mathematics, Jan. 21, 1998.
69. E. B lviken, G. Dahl, "Fra reisende handelsmenn til statistikk - en guidet rundtur i anvendt matematikk" (in Norwegian). Foredrag ved Faglig-pedagogisk dag, Universitetet i Oslo, 5. jan., 1998.
70. G. Dahl, "Optimization in telecommunications". Invited talk at Norsk numerikkm te (Norwegian Numerical Analysis meeting), Bergen, 3.-5. october, 1997.
71. G. Dahl, "Approximation of piecewise linear functions and constrained shortest paths". *16th International Symposium on Mathematical Programming*, Lausanne, Switzerland, August 24-29, 1997.
72. G. Dahl, "The 2-hop spanning tree problem and associated polytopes", *16th International Symposium on Mathematical Programming*, Lausanne, Switzerland, August 24-29, 1997.
73. G. Dahl, "Stable set polytopes for circulant graphs and spanning trees", Invited talk at University of Lisboa, Dept. of Operations Research, June 3, 1997.
74. G. Dahl, "Optimization in telecommunications". Invited talk at Royal Institute of Technology (KTH), Institute of Mathematics, Stockholm, Feb. 14, 1997.

75. G. Dahl and B. Realfsen, "Curve approximation and constrained shortest path problems", *Symposium über Operations Research (SOR 96)*, Braunschweig, 4-6. September, 1996.
76. G. Dahl, M. Stoer, A. Martin, "A polyhedral approach to a path selection problem in telecommunications", *Fifth SIAM Conference on Optimization*, Victoria, Canada, May 20-22, 1996.
77. G. Dahl, "Path packing problems arising in telecommunications", Invited talk, Brussels Free University, April 23, 1996.
78. G. Dahl, M. Stoer, A. Martin, "Routing in ATM networks". *INFORMS Meeting Fall 1995*, New Orleans, Oct. 29- Nov.1, 1995.
79. G. Dahl, M. Stoer, "Survivable network design in connection with SDH networks", *INFORMS Meeting summer 1995*, Singapore, June 26.-28., 1995.
80. G. Dahl, "Polyhedra and optimization in connection with a weak majorization ordering". 4th International *IPCO* conference (Integer programming and combinatorial optimization), Copenhagen, May 29-31, 1995.
81. G. Dahl, K. Jörnsten, A. Løkketangen, "A tabu search approach to the channel minimization problem", *ICOTA '95*, (12.-15. June, 1995) Int. conference on optimization techniques and applications. Chengdu University of Science and Technology, Chengdu, China.
82. G. Dahl, "Design of survivable telecommunication networks", *Optimization in production and transportation*, Workshop, Scheveningen, Holland 9.-11. November, 1994.
83. G. Dahl, "Discrete optimization in mobile communication networks", Invited talk, Konrad-Zuse-Zentrum, Berlin. August 1993.
84. G. Dahl and M. Stoer, "Multicommodity survivable network design", *TIMS/ORSA Joint National Meeting*, Chicago, May 16-19, 1993.
85. G. Dahl, "Graph Optimization Problems in Connection with the Management of Mobile Communications Systems". *Telecommunication Systems - modelling and analysis*, Nashville, USA, Feb. 27 - Mars 3, 1993 (Norwegian Telecom Research lecture notes, TF R 48/92).

86. G. Dahl, "The design of survivable directed networks". *The Second ORSA telecommunications Conference*, Boca Raton, Florida, March 9.-11., 1992 (Norwegian Telecom Research lecture notes, TF F 14/92).
87. G. Dahl, "The polyhedral approach to combinatorial optimization", lecture in connection with the Dr. Philos. dissertation, University of Oslo, February 4.- 5., 1992. (Norwegian Telecom Research lecture notes, TF F 3/92).
88. G. Dahl, "Some telecommunications network design problems and the bi-Steiner problem". *NATO Advanced Study Institute: New frontiers in the theory and practice of combinatorial optimization*, Ankara, Tyrkia, July 16.-23., 1990. (Norwegian Telecom Research lecture notes, TF F17/90).

Ph.D. commitee etc.

Member of Ph.D committees: Solveig Bruvoll, Martin Reimers, Erik Chr. Dyken, University of Oslo.

Member of Dr.Scient. committee Freadrik A. Dahl "Neural nets used for two-player zero-sum games", dissertation June 20, 2001.

Opponent for the Dr. Oecon. thesis Mette Bjørndal, "Topics on electricity transmission pricing", Norwegian School of Economics and Business Administration, March 17, 2000.

Opponent for the Dr. Scient. thesis A.K.M. Shadahat Hossain, "On the computation of sparse Jacobian matrices and Newton steps", Dept. of Informatics, University of Bergen, 26. Febr. 1998.

Opponent for the Lic. thesis Di Yuan, "Optimal synthesis and multicommodity routing in telecommuication networks" , University of Linköping, Inst. of Mathematics. Dissertation Jan. 20, 1998.