
List of publications by Gabriele Eichfelder

Books

- [1] **G. Eichfelder**, Variable Ordering Structures in Vector Optimization. Springer, Heidelberg, ISBN: 978-3-642-54282-4 (2014) 190 Seiten.
- [2] **G. Eichfelder**, Adaptive Scalarization Methods in Multiobjective Optimization. Springer, Heidelberg, ISBN: 978-3-540-79157-7 (2008) 242 Seiten.

Refereed Publications in International Journals

- [3] **G. Eichfelder, K. Klamroth and J. Niebling**, Nonconvex Constrained Optimization by a Filtering Branch and Bound. accepted for publication in *Journal of Global Optimization* (2020).
- [4] **S. Prinz, J. Thomann, G. Eichfelder, T. Boeck and J. Schumacher**, Expensive multi-objective optimization of electromagnetic mixing in a liquid metal. *Optimization and Engineering*, DOI: 10.1007/s11081-020-09561-4 (2020).
- [5] **R. Baier, G. Eichfelder and T. Gerlach**, Optimality Conditions for Set Optimization using a Directional Derivative based on Generalized Steiner Sets. *Optimization*, DOI: 10.1080/02331934.2020.1812605 (2020).
- [6] **M. De Santis, G. Eichfelder, J. Niebling and S. Rocktäschel**, Solving Multiobjective Mixed Integer Convex Optimization Problems. accepted for publication in *SIAM Journal on Optimization* (2020).
- [7] **G. Eichfelder und J. Jahn**, Optimality conditions in discrete-continuous non-linear optimization. accepted for publication in *Minimax Theory and its Applications* (2020).
- [8] **F. Fern, R. Füßl, G. Eichfelder, E. Manske and M. Kühnel**, Coordinate transformation and its uncertainty under consideration of a non orthogonal coordinate base. *Measurement Science and Technology*, DOI 10.1088/1361-6501/aba3f5 (2020).
- [9] **G. Eichfelder, J. Niebling and S. Rocktäschel**, An Algorithmic Approach to Multiobjective Optimization with Decision Uncertainty. *Journal of Global Optimization*, 77, 3–25 (2020).
- [10] **J. Thomann and G. Eichfelder**, Representation of the Pareto front for heterogeneous multi-objective optimization. *Journal of Applied and Numerical Optimization*, 1(3), 293–323 (2019).
- [11] **J. Thomann and G. Eichfelder**, Numerical Results for the Multi-Objective Trust Region Algorithm MHT. *Data in Briefs*, 25, DOI: 10.1016/j.dib.2019.104103 (2019).

- [12] **G. Eichfelder, T. Hotz and J. Wieditz**, An algorithm for computing Fréchet means on the sphere,
Optimization Letters, 12 (2019) 1523–1533.
- [13] **J. Thomann and G. Eichfelder**, A Trust Region Algorithm for Heterogeneous Multiobjective Optimization.
SIAM Journal on Optimization, 29(2) (2019) 1017–1047.
- [14] **J. Niebling and G. Eichfelder**, A Branch-and-Bound based Algorithm for Nonconvex Multiobjective Optimization.
SIAM Journal on Optimization, 29(1) (2019) 794–821.
- [15] **T. Boeck, D. Terzijska and G. Eichfelder**, Maximum electromagnetic drag configurations for a translating conducting cylinder with distant magnetic dipoles.
Journal of Engineering Mathematics, 108(1) (2018) 123–141.
- [16] **G. Eichfelder, C. Krüger and A. Schöbel**, Decision Uncertainty in Multiobjective Optimization.
Journal of Global Optimization 69(2) (2017) 485–510.
- [17] **T.Q. Bao, G. Eichfelder, B. Soleimani and C. Tammer**, Ekeland’s variational principle for vector optimization with variable ordering structure.
Journal of Convex Analysis 24(2) (2017) 393–415.
- [18] **G. Eichfelder and M. Pilecka**, Set Approach for Set Optimization with Variable Ordering Structures Part II: Scalarization Approaches.
Journal of Optimization Theory and Applications 171(3) (2016) 947–963.
- [19] **G. Eichfelder and M. Pilecka**, Set Approach for Set Optimization with Variable Ordering Structures Part I: Set Relations and Relationship to Vector Approach.
Journal of Optimization Theory and Applications 171(3) (2016) 931–946.
- [20] **G. Eichfelder, T. Gerlach and S. Sumi**, A modification of the α BB method for box-constrained optimization and an application to inverse kinematics.
EURO Journal on Computational Optimization 4(1) (2016) 93–121.
- [21] **C. Brás, G. Eichfelder and J. Júdice**, Copositivity tests based on the Linear Complementarity Problem.
Computational Optimization and Applications 63(2) (2016) 461–493.
- [22] **G. Eichfelder and T. Gerlach**, Characterization of properly optimal elements with variable ordering structures.
Optimization 65(3) (2016) 571–588.
- [23] **S. Dempe, G. Eichfelder and J. Fliege**, On the effects of combining objectives in multi-objective optimization.
Mathematical Methods of Operations Research 82(1) (2015) 1–18.
- [24] **G. Eichfelder**, Numerical procedures in multiobjective optimization with variable ordering structures.
Journal of Optimization Theory and Applications 162(2) (2014) 489–514.

- [25] **G. Eichfelder** and **R. Kasimbeyli**, Properly optimal elements in vector optimization with variable ordering structures.
Journal of Global Optimization 60(5) (2014) 689–712.
- [26] **I. Bomze** and **G. Eichfelder**, Copositivity detection by difference-of-convex decomposition and ω -subdivision.
Mathematical Programming Ser. A 138 (2013) 365–400.
- [27] **G. Eichfelder** and **T.X.D. Ha**, Optimality conditions for vector optimization problems with variable ordering structures.
Optimization 62(5) (2013) 597–627.
- [28] **P. Dickinson**, **G. Eichfelder** and **J. Povh**, Erratum to: „On the set-semidefinite representation of nonconvex quadratic programs over arbitrary feasible sets“.
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- [29] **G. Eichfelder** and **J. Povh**, On the set-semidefinite representation of non-convex quadratic programs over arbitrary feasible sets.
Optimization Letters 7(6) (2013) 1373–1386.
- [30] **G. Eichfelder**, Cone-valued maps in optimization.
Applicable Analysis 91(10) (2012) 1831–1846.
- [31] **G. Eichfelder** and **M. Gebhardt**, Local specific absorption rate control for parallel transmission by virtual observation points.
Magnetic Resonance in Medicine 66(5) (2011) 1468–1476.
- [32] **G. Eichfelder**, Optimal elements in vector optimization with a variable ordering structure.
Journal of Optimization Theory and Applications 151(2) (2011) 217–240.
- [33] **G. Eichfelder** and **J. Povh**, On the set-semidefinite representation of non-convex quadratic programs with cone constraints.
Croatian Operational Research Review 1 (2010) 26–39.
- [34] **G. Eichfelder**, Multiobjective bilevel optimization.
Mathematical Programming Ser. A 123 (2010) 419–449.
- [35] **G. Eichfelder**, An adaptive scalarization method in multi-objective optimization.
SIAM Journal on Optimization 19 (2009) 1694–1718.
- [36] **G. Eichfelder**, Scalarizations for adaptively solving multi-objective optimization problems.
Computational Optimization and Applications 44 (2009) 249–273.
- [37] **G. Eichfelder** and **J. Jahn**, Set-semidefinite optimization.
Journal of Convex Analysis 15 (2008) 767–801.

Book Chapters

- [38] **G. Eichfelder**, Methods for multiobjective bilevel optimization (reviewed), Kapitel in: *Bilevel optimization: advances and next challenges*, Dempe, S., Zemkoho, A. (Eds.) (2020).
- [39] **G. Eichfelder** and **T. Gerlach**, On classes of set optimization problems which are reducible to vector optimization problems and its impact on numerical test instances (reviewed), Kapitel 10 in: *Variational Analysis and Set Optimization*, Khan, A., Köbis, E., Tammer Chr. (Eds.), CRC Press (Taylor and Francis Group), p. 265-290 (2019).
- [40] **G. Eichfelder** and **M. Pilecka**, Ordering structures and their applications, Kapitel in: *Applications of Nonlinear Analysis*, Rassias, T.M. (Ed.), Springer, (2018) 256–304.
- [41] **G. Eichfelder** and **J. Jahn**, Vector and Set Optimization, Kapitel in: *Multiple Criteria Decision Analysis State of the Art Surveys*, Greco, S. et al. (Eds.), Springer (2016) 695–737.
- [42] **G. Eichfelder**, Vector Optimization in Medical Engineering, Kapitel in: *Mathematics Without Boundaries—Surveys in Interdisciplinary Research*, Pardalos, P.M. and Rassias, T.M. (Eds.), Springer (2014) 181–215.
- [43] **G. Eichfelder**, Variable ordering structures in vector optimization. Kapitel 4 in: *Recent Developments in Vector Optimization*, Q.H. Ansari, J.-C. Yao (Eds.), Springer (2012) 95–126.
- [44] **G. Eichfelder** and **J. Jahn**, Vector optimization problems and their solution concepts. Kapitel 1 in: *Recent Developments in Vector Optimization*, Q.H. Ansari, J.-C. Yao (Eds.), Springer (2012) 1–27.
- [45] **G. Eichfelder** and **J. Jahn**, Foundations of set-semidefinite optimization. Kapitel 18 in: *Nonlinear Analysis and Variational Problems*, P. Pardalos, Th.M. Rassias und A.A. Khan (Eds.), Springer (2009) 259–284.
- [46] **G. Eichfelder**, A constraint method in nonlinear multi-objective optimization (referiert). in: *Multiobjective Programming and Goal Programming, Theoretical Results and Practical Applications*, Lecture Notes in Economics and Mathematical Systems Vol. 618, V. Barichard et al. (Eds.), Springer (2009) 3–12.
- [47] **G. Eichfelder**, ε -constraint method with adaptive parameter control and an application to intensity-modulated radiotherapy (reviewed). in: *Multicriteria Decision Making and Fuzzy Systems, Theory, Methods and Applications*, K.-H. Küfer, H. Rommelfanger, C. Tammer und K. Winkler (Eds.), Shaker (2006) 25–42.

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- [48] **G. Eichfelder**, *Variable Ordering Structures in Vector Optimization*. Habilitationsschrift, Universität Erlangen-Nürnberg (2012) 174 Seiten. Überarbeitung erschienen als Springer-Buch, siehe oben.
- [49] **G. Eichfelder**, *Parametergesteuerte Lösung nichtlinearer multikriterieller Optimierungsprobleme*. Dissertation, Universität Erlangen-Nürnberg (2006) 178 Seiten. Ins Englische übersetzte und erweiterte Version als Springer-Buch erschienen, siehe oben.
- [50] **G. Eichfelder**, *Tangentielle Epiableitung mengenwertiger Abbildungen (Contingent Epiderivatives of Set Valued Maps)*. Diplomarbeit, Universität Erlangen-Nürnberg (2001) 112 Seiten.

Other Publications and Posters

- [51] **D. Brockhoff, G. Eichfelder, C.M. Fonseca, S.R. Hunter, E. Rigoni** and **M. Stiglmayr**, Computationally Expensive Functions and Large Scale Test Instances (Seminarbericht).
Scalability in Multiobjective Optimization, Dagstuhl Seminar 20031 (2020) 79–88.
- [52] **G. Eichfelder, K. Klamroth** and **J. Niebling**, Using a B&B algorithm from multiobjective optimization to solve constrained optimization problems.
In: *AIP Conference Proceedings 2070 020028* (2019).
- [53] **M. Ehrgott, G. Eichfelder, K.-H. Küfer, C. Lofi, K. Miettinen, L. Paquete, S. Ruzika, S. Sayin, R.E. Steuer, T.J. Stewart, M. Stiglmayr** and **D. Vanderpooten**, Personalization of multicriteria decision support systems (seminar report).
Personalized Multiobjective Optimization: An Analytics Perspective, Dagstuhl Seminar 18031 (2018) 55–70.
- [54] **G. Eichfelder, A. Khan, A. Löhne** and **C. Tammer**, Preface to Set-Valued Optimization and Variational Analysis: Special Issue dedicated to Professor Johannes Jahn on the occasion of his 65th birthday.
Optimization 67(7) (2018) 957–958.
- [55] **G. Eichfelder, I.M. Bomze, C. Brás** and **J. Júdice**, Global Optimization Techniques for Copositivity Testing (extended abstract).
In: *Copositivity and Complete Positivity*, Mathematisches Forschungsinstitut Oberwolfach, Report No. 52/2017 Doi: 10.4171/OWR/2017/52 (2018) 14–16.
- [56] **J. Niebling** and **G. Eichfelder**, A Branch-and-Bound-Algorithm for Multiobjective Problems (Poster).
2nd Workshop Women in Optimization, Trier, Germany (2017).

- [57] **J. Niebling** and **G. Eichfelder**, A Branch-and-Bound Algorithm for Biobjective Problems.
In: *Proceedings of the XIII Global Optimization Workshop GOW'16* (2016) 57–60.
- [58] **G. Eichfelder**, **C. Brás** and **J. Júdice**, Copositive programming and copositivity tests (Extended Abstract).
In: *Mixed-integer Nonlinear Optimization: A Hatchery for Modern Mathematics*, Mathematisches Forschungsinstitut Oberwolfach, Report No. 46/2015, Doi: 10.4171/OWR/2015/46 (2015) 2723–2725.
- [59] **G. Eichfelder**, **X. Gandibleux**, **M.J. Geiger**, **J. Jahn**, **A. Jaszkiwicz**, **J. Knowles**, **P.K. Shukla**, **H. Trautmann** and **S. Wessing**, Heterogeneous Functions (seminar report).
In: *Understanding Complexity in Multiobjective Optimization*, Dagstuhl Seminar 15031 (2015).
- [60] **D. Terzijska**, **M. Porcelli** and **G. Eichfelder**, Multi-objective optimization in the Lorentz force velocimetry framework (poster and abstract).
13th International Workshop on Optimization and Inverse Problems in Electromagnetism 2014, Delft, The Netherlands (2014).
- [61] **M. Gebhardt**, **D. Diehl**, **E. Adalsteinsson**, **L.L. Wald** and **G. Eichfelder**, Evaluation of maximum local SAR for parallel transmission (pTx) pulses based on pre-calculated field data using a selected subset of “Virtual Observation Points” (poster and abstract).
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- [62] **G. Eichfelder** und **M. Gugat**, Optimierung mit mehreren konkurrierenden Zielen.
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- [63] **G. Eichfelder**, **C. Hirschmann** und **J. Jahn**, „Entscheidungstheorie und -praxis“, „OR im Umweltschutz“ und „Simulation und Optimierung komplexer Systeme“ (Workshop-Bericht).
OR News (2010) 81–82.

Preprints (submitted works)

- [64] **G. Eichfelder**, **P. Kirst**, **L. Meng** and **O. Stein**, A general branch-and-bound framework for continuous global multiobjective optimization.
OptimizationOnline (2020).
- [65] **M. de Santis** and **G. Eichfelder**, A Decision Space Algorithm for Multiobjective Convex Quadratic Integer Optimization.
OptimizationOnline (2020).
- [66] **G. Eichfelder** and **L. Warnow**, Proximity measures based on KKT points for constrained multi-objective optimization problems.
OptimizationOnline (2019).

Patents and Patent Applications

- [67] **G. Eichfelder** and **M. Gebhardt**, Verfahren zur Bestimmung von Sensitivitätsmatrizen für kritische Hotspots.
Patent (erteilt) DE102010011588B4, Oktober 2012.
- [68] **G. Eichfelder** and **M. Gebhardt**, Method for determining sensitivity matrices for hotspots.
Patent (erteilt) US8624593 und CN102193078 und US20110224924, Oktober 2012.
- [69] **D. Diehl**, **G. Eichfelder**, **M. Gebhardt**, **J. Gierling**, **J. Jahn** and **D. Ritter**, Method and Device for Determining a Magnetic Resonance System Control Sequence. (Verfahren und Einrichtung zur Ermittlung einer Magnetresonanzsystem-Ansteuersequenz.)
Patent application US2012286778, März 2012; *Patent application Germany DE102011005174*, *Patent application international WO2012119673A1*, März 2011.

Software

- ASMO ASMO - A Solver for Multiobjective Optimization. The implementation is realized as MATLAB code. It is licensed under the GNU Lesser General Public Licence and free to use. <https://github.com/GEichfelder/ASMO>