

Prof. Dr. rer.nat. habil. Sebastian Sager

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* 7.3.1975, Westerstede (D), married, 2 daughters



— Education and Positions —

- 10/2023– • **Max Planck Fellow** at MPI Magdeburg
- 4/2017– • **Spokesperson** of DFG research training group 2297
 “Mathematical Complexity Reduction”
- 10/2014– • **Director** of the OVGU Center for Dynamic Systems
- 4/2012– • **Principal Investigator** at the IMPRS ProEng Magdeburg
- 4/2012– • **W3 full professor** at the Faculty of Mathematics, OVGU
- 4/2012 • **Habilitation** at the Ruprecht-Karls-Universität Heidelberg
- 10/2008–3/2012 • **Junior Research Group Leader** at the Interdisciplinary Center
 for Scientific Computing (IWR), Heidelberg
- 2/2008–9/2008 • **Akademischer Rat auf Zeit** at IWR, Heidelberg
- 4/2007–1/2008 • **Postdoc** in the SIMUMAT research team on aerodynamic
 shape optimization, Universidad Autónoma, Madrid (E)
- 10/2006–3/2007 • Akademischer Rat auf Zeit at IWR Heidelberg
- 2/2006–9/2006 • Postdoc at the IWR, Heidelberg
- 2/2002–2/2006 • **PhD thesis** *Numerical methods for mixed-integer optimal control
 problems* (supervisors: H.G. Bock, G. Reinelt; summa cum laude)
- 2/2002–2/2005 • Member of the International DFG research training group 710
- 2/2004–4/2004 • Research stays at U Carlos III de Madrid and U de Valladolid (E)
- 10/1995–12/2001 • Studies at the Universität Heidelberg, **diploma** in mathematics
 with specialization in physics/astronomy (grade: excellent)
- 1/2000–5/2000 • Exchange student at the University of Ho-Chi-Minh-City (VN)
- 9/1997–7/1998 • Exchange student at the Université de Montpellier (F)
- 6/1994 • Abitur at the Gymnasium Westerstede

— Offers, Honors, and Awards —

- 2021 • Offer of **W3 professor position** “Mathematics of Machine Learning” at the
 Julius-Maximilians-Universität Würzburg; not realized
- 2016 • **ERC Proof of Concept Grant** isitFlutter-727417
- 2015 • **ERC Consolidator Grant** MODEST-647573
 “Mathematical Optimization for Clinical Decision Support and Training”
 • **Otto-von-Guericke Research Award**
- 2011 • Offer of **W3 professor position** “Mathematical Optimization” at OVGU
- 2007 • **Klaus Tschira Award** for Achievements in Public Understanding of Science
- 2006 • **Dissertation prize** of the German Operations Research Society

— Teaching —

Lectures

- 2013–, 3× • *Algorithmic Parameter Estimation and Experimental Design* (M)
- 2008 • *Introduction to Numerics* (B)
- 2012–, 3× • *Introduction to Optimization* (B)
- 2021 • *Mathematics for Clinical Decision Support* (M)
- 2018–, 6× • *Modeling, Simulation, Optimization* (B/M)
- 2013–, 6× • *Nonlinear Optimization* (B/M)
- 2008–, 9× • *Mixed-integer nonlinear Optimization* (B/M)
- 2006–, 2× • *Numerics 2* (M)
- 2012–, 4× • *Optimal Control / Algorithmic Dynamic Optimization* (M)
- 2018–, 4× • *Optimization Methods for Machine Learning* (M)

Seminars

- 2022 • *Mathematics for Clinical Decision Support* (M)
- 2018–, 5× • *Optimization and Machine Learning* (M)
- 2013–, 2× • *Optimal Control* (M), *Optimal Control Software* (M)
- 2011–, 4× • *Global (and Stochastic) Optimization* (M)
- 2014 • *Chebfun* (M)
- 2009 • *Scientific Software Engineering* (M)
- 2008 • *Artificial Intelligence and Robotics* (B/M)
- 2006 • *Optimal control in economics* (M)

Compact Courses

- 2013, '17 • *Optimization under Uncertainties* (PhD)
- 2014, '17 • *Complexity Reducing Formulations in Optimization* (PhD)
- 2009, '12 • *Optimization with Differential Equations* (PhD)
- 2005, '10 • *Mixed-Integer Nonlinear Programming* (PhD)

— Academic Work —

Academic work

- 2019–, 2× • Guest editor of *Mathematical Programming*
- 2017– • Member *Forschungskommission* at OVGU
- 2016–2019 • Member *Rektoratskommission Gleichstellung* at OVGU
- 2016 • Organizing committee member of the *IFAC FOSBE 2016*
- 2015–, 3× • Organizer of the *Oberwolfach Workshop on MINLP*
- 2013–2017 • Editor and Guest-Editor of *Optimal Control and Applications*
- 2013 • Co-organizer of the *CWMINLP13 workshop* in Paris
- 2012 • Scientific committee member of the *Global Optimization Workshop*
 - Guest editor of *Computational Science*
- 2012– • Main organizer of public outreach activity “Magdeburger Mathenacht”
- 2012–2021 • Series editor of the *Differential-Algebraic Equations Forum*, Springer
- 2011 • Organizer of the ANLO11 workshop *Nonlinear Optimization*
 - Organizer of the OCE11 workshop *Optimal Control & Economics*
- 2010 • Organizer of the SOCCER 2010 conference on *Commodities*
 - Organizer of SCCS 2010: *Scientific Computing for the Cognitive Sciences*
- 2009 • Organizer: *German-American Frontiers of Engineering Symposium 2009*
- 2008 • Co-organizer of OPTEX2008 workshop on *Industrial Modeling*
- 2007 • Co-chair *Czech–French–German Conference on Optimization 2007*

— Third Party Funding —

- Total sum: ca. **15.5 MEuro** Own contribution: ca. **6.8 MEuro**
- 2024-2027 • **EFRE**: *timingMatters*
- 2024-2027 • **EFRE**: *IntelAlgen* with L. Struckmann and K. Rinke
- 2021-2028 • **DFG SPP 2331**: *mlP2X* with A. Kienle and A. Seidel-Morgenstern
- 2016-2022 • **DFG SPP 1962**: *Non-smooth Methods for Complementarity Formulations of Switched Advection-Diffusion Processes* with C. Kirches
- 2019-2021 • **Excellency–Synergy** Program of Saxony-Anhalt
- 2018-2021 • BMBF Project *P2Chem* with P. Benner, M. Stoll, K. Sundmacher
- 2017-2026 • **DFG RTG 2297** *Mathematical Complexity Reduction* (spokesperson), with 12 / 9 PIs (first/second funding period) from OVGU and MPI
- 2017-2020 • Project *OTTI* with Volkswagen, with R. Findeisen
- 2016-2018 • **ERC Proof of Concept Grant** isitFlutter-727417
- 2016 • **High Performance** Program of Saxony-Anhalt
- 2015-2020 • **ERC Consolidator Grant** MODEST-647573
- 2014-2017 • Project *Revenue Management* with Air Berlin
- 2013-2016 • BMBF Project “GOSSIP” with H.G. Bock, C. Kirches, E. Kostina
- 2013-2016 • Klaus-Tschira-Foundation: *Cardiac arrhythmia*, with E. Scholz
- 2010–2013 • **EU project** EMBOCON with ETH, ICL, Leuven, Bucharest, industry
- 2009-2012 • Project *Revenue Management* with Lufthansa
- 2009-2012 • **DFG SPP 1253** *Optimization with Partial Differential Equations*, with H.G. Bock, S. Engell

— Supervision —

15 Ongoing PhD theses (as first advisor)

- 2022- • Feldmann, S.: *The Spread Dimension*
- 2019- • Gebhard, A.: *Modeling and Control of Chemotherapy for Acute Lymphoblastic Leukemia*
- 2016- • Hahn, M.: *Mixed-integer PDE constrained optimization*
- 2020- • Haritonova, V.: *Inverse Optimal Control and Inverse Reinforcement Learning*
- 2023- • Klein, T.: *Mathematical Foundations of Neural Networks and Applications in Neuroscience*
- 2024- • Lampel, R.: *Lift to Learn*
- 2017- • Le, D.D.: *Optimal Urban Traffic*
- 2017- • Lilienthal, P.: *Personalized Mathematical Modeling of Haematopoiesis*
- 2020- • Martensen, J.: *Deep Learning for Novel Power2Chem Processes*
- 2015- • Matke, C.: *Modeling & Optimization of Battery Storage in the Power Grids*
- 2022- • Plate, C.: *Machine Learning for the Design and Control of Power2X Processes*
- 2021- • Reimann, A.: *Machine Learning Models for Acute Leukemia*
- 2020- • Shaydurova, D.: *Complexity Reducing Approximations of Polynomial Optimization Problems*
- 2015- • Tetschke, M.: *Global Optimal Control for Clinical Treatment*
- 2023- • Wittmann, R.: *Direct Optimal Control Methods in Chemical Engineering*

7 Ongoing PhD theses (as second advisor)

- 2024- • Geppert, H.: *Geometric analysis of neural networks*
- 2024- • Horn, F.: *Mixed-integer nonlinear programming*
- 2021- • Kapustsin, U.: *Structure and Physics preserving Neural Networks*

— Supervision (continued) —

- 2018- • Minakowska, M.: *Machine Learning enhanced Modeling and Simulation of Thrombosis*
- 2018- • Monem, S.: *Model Order Reduction and Mixed-Integer Nonlinear Optimization*
- 2020- • Pfefferkorn, M.: *Machine Learning Supported Model Predictive Control with Guarantees*
- 2023- • Stoffregen, N.: *Data Segmentation for Non-stationary Time Series*

12 Completed PhD theses (as first advisor)

- 2024 • Weber, T.: *Source Detection in Graphs*
- 2021 • Uebbing, J.: *Power-to-Methane Process Synthesis via Mixed Integer Nonlinear Programming*
- 2021 • Zeile, C.: *Combinatorial Integral Approximation Decompositions for Mixed-integer Optimal Control*
- 2020 • Jost, F.: *Model-based Optimal Treatment Schedules for Acute Leukemia*
- 2018 • Kehrlé, F.: *Inverse Simulation of Atrial Tachycardia*
- 2017 • Rauch, J.: *The Airline Pricing Problem*
- 2016 • Sorgatz, S.: *Optimization of Vehicular Traffic at Traffic-Light Intersections*
- 2015 • Engelhart, M.: *Optimization-based Training of Human Decision Making*
- 2015 • Diedam, H.: *Global Optimal Control using Direct Multiple Shooting*
- 2014 • Frasch, J.: *Parallel Algorithms for Optimization of Dynamic Systems in Real Time*
- 2014 • Huschto, T.: *Numerical Methods for Random Parameter Optimal Control and the Optimal Control of Stochastic Differential Equations*
- 2013 • Jung, M.: *Relaxations and Approximations for Mixed-integer Optimal Control*

4 Completed PhD theses (as second advisor)

- 2021 • Peters, B.: *Polynomial Optimization on Polytopes*
- 2021 • Himmel, A.: *Optimization-based Operation Strategy and Storage Design for Coupled Processes*
- 2013 • Kellner, S.: *Modeling of Demand for Commodities and a Case Study of the Petrochemical Market*
- 2013 • Kramer, L.: *Modeling and Reduction of a Multi-Commodity Supply-Demand Trade Network*

— Publications —

2 Patents

- 2016 • Scholz, E., Sager, S., Katus, H., *A system and computer program product for automatically distinguishing atrial flutter from atrial fibrillation*, EP2757940B1, 13.4.2016, <https://www.google.com/patents/EP2757940B1>
- 2010 • Gehring, O., Kauffmann, F., Bock, H.G., Kirches, C., Sager, S., Schlöder, J.P., *Verfahren zum Steuern des Betriebs eines Fahrzeugs*, DE102009030784A1, 4.2.2010, <http://www.google.com/patents/DE102009030784A1>

3 Theses

- 2011 • Sager, S., *On the Integration of Optimization Approaches for Mixed-Integer Nonlinear Optimal Control*, habilitation thesis, Ruprecht-Karls-Universität Heidelberg, 2011, <https://mathopt.de/publications/Sager2011d.pdf>

— Publications (continued) —

- 2005 • Sager, S., *Numerical methods for mixed-integer optimal control problems*, PhD thesis, Ruprecht-Karls-Universität Heidelberg, published in Der Andere Verlag, Tönning, Lübeck, Marburg, ISBN 3-89959-416-9, available at <https://mathopt.de/publications/Sager2005.pdf>
- 2001 • Sager, S., *Lange Schritte im Dualen Simplex-Algorithmus*, diploma thesis, Ruprecht-Karls-Universität Heidelberg, available at <https://mathopt.de/publications/Sager2001.pdf>

73 Journal Publications (plus 10 submitted ones)

- Subm • Averkov, G., Peters, B., Sager, S., *Sparse Convex Relaxations in Polynomial Optimization*, preprint <https://arxiv.org/abs/2403.03560>
- Banga, J.R., Sager, S., *Generalized Inverse Optimal Control and its Application in Biology*, submitted to **Annual Reviews of Control**, Preprint at <http://arxiv.org/abs/2405.20747>
- Esfeden, R.A., Plate, C., Sager, S., Swevers, J., *Dynamic Programming for Mixed Integer Optimal Control Problems with Dwell Time Constraints*, submitted to **Journal of Process Control**, preprint https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5043263
- Ghezzi, A., van Roy, W., Sager, S., Diehl, M., *A Sequential Benders-based Mixed-Integer Quadratic Programming Algorithm*, submitted to **Mathematical Programming Computation**
- Kaps, L., Leipold, J., Plate, C., Martensen, C.J., Kortuz, W., Seidel-Morgenstern, A., Kienle, A., Sager, S., *Optimal Experiments for Hybrid Modeling of Methanol Synthesis Kinetics*, submitted to **Computers and Chemical Engineering**
- Lampel, R., Sager, S., *On liftings that improve convergence properties of Newton's Method for Boundary Value Optimization Problems*, submitted to **Mathematical Programming Computation**, preprint at <https://optimization-online.org/?p=29392>
- Martensen, C.J., Korsbo, N., Ivaturi, V., Sager, S., *Data-Driven Discovery of Feedback Mechanisms in Acute Myeloid Leukaemia: Alternatives to classical models using Deep Nonlinear Mixed Effect modeling and Symbolic Regression*, preprint at <https://www.biorxiv.org/content/10.1101/2024.06.17.599366v1.full>
- Plate, C., Hahn, M., Klimek, A., Ganzer, C., Sundmacher, K., Sager, S., *An analysis of optimization problems involving ReLU neural networks*, submitted to **Optimization and Engineering**
- Plate, C., Martensen, C.J., Sager, S., *Optimal Experimental Design for Universal Differential Equations* submitted to **IEEE Transactions on Automatic Control**, Preprint at <http://arxiv.org/abs/2408.07143>
- Reimann, A., Schalk, E., Mougiakakos, D., Fischer, T., Sager, S., *Exploring innovative G-CSF schedules in AML cytarabine-based consolidation through a digital twin study of white blood cell recovery*, submitted to **Oncology Research and Treatment**
- Schmid, P., Klein, T., Minakowski, P., Sager, S., Reichert, C., Knight, R.T., Duerschmid, S., *Temporal kinetics of brain state effects on visual perception*, preprint <https://doi.org/10.1101/2024.08.02.606289>

— Publications (continued) —

- 2025 • Kessler, T., Plate, C., Martensen, C.J., Leipold, J., Kaps, L., Seidel-Morgenstern, A., Sager, S., Kienle, A., *Two degrees of freedom control of a multistage power to methanol reactor*, **Computers and Chemical Engineering**, DOI 10.1016/j.compchemeng.2024.108893
- Klein, T., Minakowski, P., Sager, S., *Patched Brain Transformer: Flexible Model for Supervised Pre-Trained EEG Decoding*, **Scientific Reports**, DOI 10.1038/s41598-025-86294-3, Vol. 15, pp. 10935
- Shaydurova, D., Kaibel, V., Sager, S., *Refined TSSOS*, accepted by **SIAM Journal on Optimization**
- 2024 • Martensen, C.J., Plate, C., Sager, S.: *DynamicOED.jl: A Julia package for solving optimum experimental design problems*, **Journal of Open Source Software**, DOI 10.21105/joss.06605, Vol. 9 (98), pp. 6605
- Plate, C., Sager, S., Stoll, M., Tetschke, M., *Second-order Partial Outer Convexification for Switched Dynamical Systems*, **IEEE Transactions on Automatic Control**, Vol. 69 (7), pp. 4643–4656
- Sager, S., Tetschke, M., Zeile, C., *A numerical study of transformed mixed-integer optimal control problems*, **Mathematical Programming Computation**, Vol. 16, pp. 561–597, DOI 10.1007/s12532-024-00263-x
- Weber, T., Kaibel, V., Sager, S., *Source Detection on Graphs*, **Optimization and Engineering**, Vol. 25, pp. 1151–1177, **Howard Rosenbrock best paper prize 2023**, <https://link.springer.com/article/10.1007/s11081-023-09869-x>
- 2023 • Bürger, A., Zeile, C., Altmann-Dieses, A., Sager, S., Diehl, M., *A Gauss-Newton-based Decomposition Algorithm for Nonlinear Mixed-Integer Optimal Control Problems*, **Automatica**, Vol. 152, pp. 110967
- Gebhard, A., Lilienthal, P., Metzler, M., Rauh, M., Sager, S., Schmiegelow, K., Toksvang, L.N., Zierk, J., *Pharmacokinetic-Pharmacodynamic Modeling of Maintenance Therapy for Childhood Acute Lymphoblastic Leukemia*, **Scientific Reports**, Vol. 13 (1), pp. 11749
- Hahn, M., Leyffer, S., Sager, S., *Binary Optimal Control by Trust-Region Steepest Descent*, **Mathematical Programming**, Vol. 197 (1), pp. 147–190
- Manns, P., Hahn, M., Kirches, C., Leyffer, S., Sager, S., *On Convergence of Binary Trust-Region Steepest Descent*, **Journal of Nonsmooth Analysis and Optimization**, Vol. 4, pp. 10164
- Reimann, A., Schalk, E., Mougiakakos, D., Weber, D., Döhner, H., Récher, C., Dumas, P.-Y., Ditzhaus, M., Fischer, T., Sager, S., *AML Consolidation Therapy: Timing Matters*, **Journal of Cancer Research and Clinical Oncology**, Vol. 149 (15), pp. 13811–13821
- S. Sager, *Digital Twins in Oncology*, **Journal of Cancer Research and Clinical Oncology**, Vol. 149 (9), pp. 5475–5477, DOI 10.1007/s00432-023-04633-1
- 2022 • Le, D.D., Merkert, M., Sorgatz, S., Hahn, M., Sager, S., *Autonomous traffic at intersections: an optimization-based analysis of possible time, energy, and CO₂ savings*, **Networks**, Vol. 79 (3), pp. 338–363
- Thüinen, A., Leyffer, S., Sager, S., *State Elimination for Mixed-Integer Optimal Control of Partial Differential Equations by Semigroup Theory*, **Optimal Control, Applications and Methods**, Vol. 43 (3), pp. 867–883

— Publications (continued) —

- Zeile, C., Weber, T., Sager, S., *Combinatorial Integral Approximation Decompositions for Mixed-Integer Optimal Control*, **Algorithms**, Vol. 15 (4), pp. 121
- 2021 • Maggi, A., Garmatter, D., Sager, S., Stoll, M., Sundmacher, K., *Power-to-Syngas: a PARAREAL optimal control approach*, **Frontiers in Energy Research**, Vol. 9, DOI 10.3389/fenrg.2021.720489
- Minakowska, M., Richter, T., Sager, S., *A finite element / neural network framework for modeling suspensions of non-spherical particles – Concepts and medical applications*, **Vietnam Journal of Mathematics**, Vol. 49, pp. 207–235
- Robuschi, N., Zeile, C., Sager, S., Braghin, F., Cheli, F., *Multiphase Mixed-Integer Nonlinear Optimal Control of Hybrid Electric Vehicles*, **Automatica**, Vol. 123, pp. 109325
- Sager, S., Bernhardt, F., Kehrle, F., Merkert, M., Potschka, A., Meder, B., Katus, H., Scholz, E., *Expert-Enhanced Machine Learning for Cardiac Arrhythmia Classification*, **PLoS One**, 16.12: e0261571
- Sager, S., Zeile, C., *On Mixed-Integer Optimal Control with Constrained Total Variation of the Integer Control*, **Computational Optimization and Applications**, Vol. 78.2, pp. 575–623
- Schweidtmann, A.M., Esche, E., Fischer, A., Kloft, M., Repke, J., Sager, S., Mitsos, A., *Machine Learning in Chemical Engineering: A Perspective*, **Chemie Ingenieur Technik**, Vol. 93 (12), pp. 2029–2039, DOI 10.1002/cite.202100083
- Uebbing, J., Biegler, L.T., Rikho-Struckmann, L., Sager, S., Sundmacher, K., *Optimization of Pressure Swing Adsorption via a Trust-Region Filter Algorithm and Equilibrium Theory*, **Computers & Chemical Engineering**, Vol. 151, pp. 107340
- Zeile, C., Rauwolf, T., Schmeisser, A., Mizerski, J.K., Braun-Dullaes, R.C., Sager, S., *An Intra-Cycle Optimal Control Framework for Ventricular Assist Devices based on Atrioventricular Plane Displacement Modeling*, **Annals of Biomedical Engineering**, Vol. 49(12), pp. 3508–3523
- Zeile, C., Robuschi, N., Sager, S., *Mixed-Integer Optimal Control under Minimum Dwell Time Constraints*, Optimization Online, 2019/09/7366, **Mathematical Programming B**, Vol. 188 (2), pp. 653–694, DOI 10.1007/s10107-020-01533-x
- 2020 • Himmel, A., Sager, S., Sundmacher, K., *Time-minimal setpoint transition for nonlinear SISO systems under different constraints*, **Automatica**, Vol. 114, pp. 108806
- Jost, F., Schalk, E., Weber, D., Döhner, H., Fischer, T., Sager, S., *Model-based optimal AML consolidation treatment*, **IEEE Transactions on Biomedical Engineering**, Vol. 67 (12), pp. 3296–3306
- Jost, F., Zierk, J., Le, T.T.T., Raupach, T., Rauh, M., Suttorp, M., Stanulla, M., Metzler, M., Sager, S., *Model-based simulation of maintenance therapy of childhood acute lymphoblastic leukemia*, **Frontiers in Physiology**, Vol. 11, pp. 217
- Lilienthal, P., Tetschke, M., Schalk, E., Fischer, T., Sager, S., *Optimized and Personalized Phlebotomy Schedules for Patients suffering from Polycythemia Vera*, **Frontiers in Physiology**, Vol. 11, pp. 328

— Publications (continued) —

- Rihko-Struckmann, L., Uebbing, J., Sager, S., Sundmacher, K., *CO₂ Methanation Process Synthesis by Superstructure Optimization*, **Journal of CO₂ Utilization**, Vol. 40, pp. 101228
- Scholz, E., Hartlage, C., Bernhardt, F., Weber, T., Salatzki, J., André, F., Lugenbiel, P., Riffel, J., Katus, H., Sager, S., *Spatial relationship between ablation sites within the pulmonary trunk and the left coronaries: Systematic risk assessment based on automated three-dimensional distance measurements*, **Heart Rhythm O₂**, Vol. 1.1, pp. 14–20
- 2019 • A. Bürger, C. Zeile, A. Altmann-Dieses, S. Sager, M. Diehl, *Design, Implementation and Simulation of an MPC Algorithm for Switched Nonlinear Systems under Combinatorial Constraints*, **Journal of Process Control**, Vol. 81, pp. 15–30
- T. Huschto, M. Podolskij, Sager, S., *The asymptotic error of chaos expansion approximations for stochastic differential equations*, **Modern Stochastics: Theory and Applications**, Vol. 6 (2), pp. 145–165
- Jost, F., Schalk, E., Rinke, K., Fischer, T., Sager, S., *Mathematical Models for the Influence of Cytarabine on White Blood Cell Dynamics in Acute Myeloid Leukemia*, **PLOS One**, Vol. 14 (7), DOI 10.1371/journal.pone.0204540
- Weber, T., Sager, S., Gleixner, A., *Solving Quadratic Programs to High Precision using Scaled Iterative Refinement*, **Mathematical Programming Computation**, Vol. 11 (3), pp. 421–455
- 2018 • Diedam, H., Sager, S., *Global optimal control with the direct multiple shooting method*, **Optimal Control Applications and Methods**, Vol. 39 (2), pp. 449–470, DOI 10.1002/oca.2324
- Jung, M.N., Kirches, C., Sager, S., Sass, S., *Computational Approaches for Mixed-Integer Optimal Control Problems with Indicator Constraints*, **Vietnam Journal of Mathematics**, Vol. 46, pp. 1023–1051, DOI 10.1007/s10013-018-0313-z
- Le, T.T.T., Jost, F., Raupach, T., Zierk, J., Rauh, M., Suttorp, M., Stanulla, M., Metzler, M., Sager, S., *A mathematical model of white blood cell dynamics during maintenance therapy of childhood acute lymphoblastic leukemia*, **Mathematical Medicine and Biology**, DOI 10.1093/imammb/dqy017
- Le, T.T.T., Jost, F., Sager, S., *Optimal Control of Vibration-Based Micro Energy Harvesters*, **Journal of Optimization Theory and Applications**, Vol. 179 (3), pp. 1025–1042
- Tetschke, M., Lilienthal, P., Pottgießer, T., Fischer, T., Schalk, E., Sager, S., *Mathematical modeling of RBC count dynamics after blood loss*, **Processes**, Vol. 6 (9), 157, DOI 10.3390/pr6090157
- 2017 • Engelhart, M., Funke, J., Sager, S. *A Web-based Feedback Study on Optimization-based Training and Analysis of Human Decision Making*, **Journal of Dynamic Decision Making**, Vol. 3 (1)
- Jost, F., Sager, S., Le Thi, T.T., *A Feedback Optimal Control Algorithm with Optimal Measurement Time Points*, **Processes**, Vol. 5 (1), 10
- Weber, T., Katus, H.A., Sager, S., Scholz E.P., *Novel Algorithm for Accelerated Electroanatomic Mapping and Prediction of Earliest Activation of Focal Cardiac Arrhythmias using Mathematical Optimization*, **Heart Rhythm**, Vol 14 (6), pp. 875–882

— Publications (continued) —

- 2016 • Janka, D., Kirches, C., Sager, S., Wächter, A., *An SR1/BFGS SQP algorithm for nonconvex nonlinear programs with block-diagonal Hessian matrix*, **Mathematical Programming Computation**, Vol. 8 (4), pp. 435–459
- 2015 • Frasch, J. V., Sager, S., Diehl, M., *A parallel quadratic programming method for dynamic optimization problems*, **Mathematical Programming Computation**, Vol. 7 (3), pp. 289–329
- Jung, M.N., Reinelt, S., Sager, S., *The Lagrangian Relaxation for the Combinatorial Integral Approximation Problem*, **Optimization Methods and Software**, Vol. 30 (1), pp. 54–80
- Sager, S., Claeys, M., Messine, F., *Efficient upper and lower bounds for global mixed-integer optimal control*, **Journal of Global Optimization**, Vol. 61 (4), pp. 721–743
- 2014 • Duran, B.J., Jung, M.N., Ocampo-Martinez, C., Sager, S., Cambrano, G., *Minimization of Sewage Network Overflow*, **Water Resources Management**, Vol. 28 (1), pp. 41–63
- Huschto, T., Sager, S., *Pricing conspicuous consumption products in recession periods with uncertain strength*, **European Journal of Decision Processes**, Vol. 2 (1–2), pp. 3–30
- Huschto, T., Sager, S., *Solving Stochastic Optimal Control Problems by a Wiener Chaos Approach*, **Vietnam Journal of Mathematics**, Vol. 42(1), pp. 83–113
- Scholz, E.P., Kehrle, F., Vossel, S., Hess, A., Zitron, E., Katus, H.A., Sager, S., *Discriminating atrial flutter from atrial fibrillation using a multilevel model of atrioventricular conduction*, **Heart Rhythm**, Vol. 11(5), pp. 877–884
- 2013 • Engelhart, M., Funke, J., Sager, S., *A Decomposition Approach for a New Test-Scenario in Complex Problem Solving*, **Journal of Computational Science**, Vol. 4(4), pp. 245–254
- Hante, F., Sager, S., *Relaxation Methods for Mixed-Integer Optimal Control of Partial Differential Equations*, **Computational Optimization and Applications**, Vol. 55(1), pp. 197–225
- Kirches, C., Potschka, A., Bock, H.G., Sager, S., *A Parametric Active Set Method for QPs with Vanishing Constraints Arising in a Robot Motion Planning Problem*, **Pacific Journal of Optimization**, Vol. 9(2), pp. 275–299
- Sager, S., *Sampling Decisions in Optimum Experimental Design in the Light of Pontryagin’s Maximum Principle*, **SIAM Journal on Control and Optimization**, Vol. 51(4), pp. 3181–3207
- 2012 • Sager, S., Bock, H.G., Diehl, M., *The Integer approximation error in mixed-integer optimal control*, **Mathematical Programming A**, Vol. 133(1-2), pp. 1–23
- 2011 • Engelhart, M., Lebiedz, D., Sager, S., *Optimal control for cancer chemotherapy ODE models: Potential of optimal schedules and choice of objective function*, **Mathematical Biosciences**, Vol. 229(1), pp. 123–134
- Huschto, T., Feichtinger, G., Kort, P., Hartl, R.F., Sager, S., Seidl, A., *Numerical solution of a conspicuous consumption model with constant control delay*, **Automatica**, Vol. 47(9), 1868–1877
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- Alexander von Humboldt Foundation
- Deutsche Forschungsgemeinschaft
- Dutch National Science Foundation
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