PUBLICATIONS

Martin Burger

PREPRINTS / SUBMITTED PAPERS

- J.Berendsen, M.Burger, J.Pietschmann, On a cross-diffusion model for multiple species with nonlocal interaction and size exclusion, Preprint (2016), and submitted
- M.Burger, Y.Dong, F.Sciacchitano, Bregman cost for Non-Gaussian Noise, Preprint (2016).
- J.Grah, J.Harrington, S.B.Koh, J.Pike, A.Schreiner, M.Burger, C.Schönlieb, S.Reichelt, Mathematical imaging methods for mitosis analysis in live cell phase contrast microscopy, Preprint (2016), and submitted.
- E.M.Brinkmann, M.Burger, J.Rasch, C.Sutour, Bias-reduction in variational regularization, Preprint (2016), and submitted.
- M.Burger, H.Kekkonen, T.Helin, Large noise in variational regularization, arxiv 1602.00520 (2016), and submitted.
- M.Burger, J.Modersitzki, S.Suhr, A nonlinear variational approach to motion-corrected reconstruction of density images, arxiv 1511.09048 (2015), and submitted.
- L.Reips, M.Burger, R.Engbers, Towards dynamic PET reconstruction under flow conditions: Parameter identification in a PDE model, arxiv 1411.5143(2014), and submitted
- M.Burger, Y.Dong, M.Hintermüller, Exact relaxation for classes of minimization problems with binary constraints, (2012), arxiv 1210.7507.
- N.Emken, A.Püschel, M.Burger, Mathematical modelling of polarizing GTPases in developing axons, (2012), arxiv 1204.5725

PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. M.Bruna, M.Burger. H.Ranetbauer, M.Wolfram, Cross-diffusion systems with excluded-volume effects and asymptotic gradient flow structures, J. Nonlin. Sciences (2016), to appear.
2. M.Burger, A.Lorz, M.Wolfram, Balanced growth path solutions of a Boltzmann mean field game model for knowledge growth, Kinetic and related Methods (2016), to appear.
3. M.Burger, J.F.Pietschmann, Flow characteristics in a crowded transport model, Nonlinearity (2016), to appear.
4. M.Burger, A.Lorz, M.Wolfram, On a Boltzmann mean field game model for knowledge growth, SIAM J. Appl. Math. (2016), to appear.
5. S.Wagner, M.Burger, C.H.Wolters, An optimization approach for well-targeted transcranial direct current stimulation, SIAM J. Appl. Math. (2016), to appear.

6. M.Burger, G.Gilboa, M.Moeller, L.Eckardt, D.Cremers, Spectral decompositions using one-homogeneous functionals, SIAM J. Imaging Sciences (2016), to appear.
7. T.Stocks, T.Hillen, J.Gong, M.Burger, A stochastic model for normal tissue complication probability (NTCP) in radiation treatment of cancer, Math. Medicine Biology (2016), to appear.
8. M.Burger, C.Rossmanith, X.Zhang, Simultaneous reconstruction and segmentation for dynamic SPECT imaging, Inverse Problems 32 (2016), 104002.
9. G.Gilboa, M.Moeller, M.Burger: Nonlinear spectral analysis via one-homogeneous functionals – overview and future prospects, J. Math. Imaging Vision 56 (2016), 300-319.
10. M.Burger. S.Hittmeir, H.Ranetbauer, M.T.Wolfram, Lane formation by side stepping, SIAM J. Math. Anal. 48 (2016), 981-1005.
11. S.Wagner, F.Lucka, J.Vorwerk. C.Herrmann, G.Nolte, M.Burger, C.Wolters, Using reciprocity for relating the simulation of transcranial current stimulation to the EEG forward problem, Neuroimage (2016), to appear
12. M.Burger, K.Papafitsoros, E.Papoutselis, C.Schönlieb, Infimal convolution regularisation functionals of BV and Lp Spaces: The finite p case, JMIV 55 (2016), 343-369.
13. M.Burger, O.L.Elvetun, M.Schlottbom, Diffuse interface methods for inverse problems: Case study for an elliptic Cauchy problem, Inverse Problems 31 (2015), 125002.
14. M.Burger, O.L.Elvetun, M.Schlottbom, Analysis of the diffuse domain method for second order elliptic boundary value problems, Foundations of Computational Mathematics (2015), DOI: 10.1007/s10208-015-9292-6
15. M.Burger, T.Esposito, C.Zeppieri, Second-order edge penalization in the Ambrosio-Tortorelli functional, Multiscale Modelling and Simulation 13 (2015), 1354-1389.
16. P.Heins, M.Möller, M.Burger, Locally sparse reconstruction using l1,infinity norms, Inverse Problems and Imaging 9 (2015),1093-1137.
17. T.Helin, M.Burger, Maximum a posteriori probability estimates in infinite-dimensional Bayesian inverse problems, Inverse Problems 31 (2015), 085009.
18. C.Schmidt, S.Wagner, M.Burger, U.Van Rienen, C.Wolters, Impact of uncertain head tissue conductivity in the optimization of transcranial direct current stimulation, J. Neural Eng. 12 (2015), 046028
19. M.Möller, E.Brinkmann, M.Burger, T.Seibold, Color Bregman TV, SIAM J. Imaging Sci. 7 (2014), 2771-2806.
20. M.Burger, J.Müller, E.Papoutselis, C.Schönlieb, Total variation regularisation in measurement and image space for PET reconstruction, Inverse Problems 30 (2014), 105003.
21. M.Burger, F.Lucka, Maximum-a-posteriori estimates in linear inverse problems with log-concave priors are proper Bayes estimators, Inverse Problems 30 (2014), 114004
22. R.Engbers, M.Burger, V.Capasso, Inverse problems in geographical economics: Parameter identification in the spatial Solow model, Phil. Trans. Royal Soc.Special Issue on PDEs in socio-economics (2014), 372 20130402; doi:10.1098/rsta.2013.0402
23. M.Burger, L.Caffarelli, P.Markowich, M.T.Wolfram, On the asymptotic behaviour of a Boltzmann-type price formation model, Comm. Math. Sci. 12 (2014), 1353-1361.
24. M.Burger, L.Caffarelli, P.Markowich, M.T.Wolfram, On a Boltzmann-type price formation model, Proc. Royal Soc. A 469 (2013), 2157 20130126.

25. M.Burger, R.Fetecau, Y.Huang, Stationary states and asymptotic behaviour of aggregation models with nonlinear diffusion, SIAM J. Appl. Dyn. Syst. 13 (2014), 397-424.
26. M.Burger, M.DiFrancesco, P.Markowich, M.T.Wolfram, Mean field games with nonlinear mobilities in pedestrian dynamics, DCDS B 19 (2014), Special Issue,1311-1333.
27. M.Möller, M.Burger, P.Dieterich, A.Schwab, A framework for automated cell tracking in phase contrast imaging based on normal velocities, J. Vis. Comm. Image Repr. 25 (2014), 396-409.
28. C.Mallidis, V.Sanchez, J.Wistuba, F.Wübbeling, M.Burger, C.Fallnich, S.Schlatt, Raman Microspectroscopy. Shining a new (old) light on reproductive medicine, Human Reproduction Update 20 (2014), 403-414.
29. J.F.Pietschmann, M.T.Wolfram, M.Burger, C.Trautmann, G.Nguyen, M.Pevarnik, V.Bayer, Z.Siwy, Rectification properties of conically shaped nanopores: consequences of miniaturization, Phys. Chem. Chem. Phys. 15 (2013), 16917-16926.
30. L.Tang, M.Dechant, V.Sanchez, J.Wistuba, M.Boiani, A.Pilatz, G.Schuler, S.Bhushan, S.Tchatalbachev, F.Wübbeling, M.Burger, T.Chakraborty, C.Mallidis, A.Meinhardt, Structural and functional integrity of spermatozoa is compromised as a consequence of acute uropathogenic E.coli associated epididymitis, Biology of Reproduction 89 (2013), 1-10. doi: 10.1095/biolreprod.113.110379
31. U.Eppelmann, F.Gottardo, J.Wistuba, J.Ehmcke, N.Kossack, B.Westernstroeer, K.Redmann, F.Wuebbeling, M.Burger, F.Tuettelmann, S.Kliesch, C.Mallidis, Raman microspectroscopic discrimination of TCam-2 cultures reveals the presence of two sub populations of cells, Cell & Tissue Research (2013), doi: 10.1007/s00441-013-1684-9
32. M.Burger, J.F.Pietschmann, M.T.Wolfram, Identification of nonlinearities in transport-diffusion models of size exclusion, Inverse Problems and Imaging 7 (2013), 1157-1182.
33. M.Benning, M.Burger, Ground states and singular vectors of convex variational regularization methods, Meth. Appl. Analysis 20 (2013), 295-334.
34. M.Benning, C.Brune, M.Burger, J.Müller, Higher-order TV methods – enhancement via Bregman iteration, J. Sci. Comp. 54 (2013), 269-310.
35. M.Möller, M.Burger, Multiscale methods for polyhedral regularizations, SIAM J. Optim. 23 (2013), 1424-1456.
36. M.Burger, J.Flemming, B.Hofmann, Convergence rates in l1-regularization if the sparsity assumption fails, Inverse Problems 29 (2013), 025013.
37. D.Tenbrinck, A.Sawatzky, M.Burger, X.Jiang, A variational framework for region-based segmentation incorporating physical noise models, J. Math. Imaging Vision 47 (2013), 179-209.
38. M.Burger, J.Haskovec, M.Wolfram, Individual-based and mean-field models for direct aggregation, Physica D 260 (2013), 145-158.
39. V.Sanchez, K.Redmann, J.Wistuba, F.Wübbeling, M.Burger, H.Oldenhof, W.Wolkers, S.Kliesch, S.Schlatt, C.Mallidis, Oxidative DNA damage in human sperm can be detected by Raman microspectroscopy, Fertility and Sterility 98 (2012), 1124-1129.
40. M.Burger, J.Modersitzki, L.Ruthotto, A hyperelastic regularization energy for image registration, SIAM J. Sci. Comp. 35 (2013), 132-148.
41. M.Burger, M.Di Francesco, M.Franek, Stationary states of quadratic diffusion equations with long-range attraction, Comm. Math. Sci. 11 (2013), 709-738.

42. L.Ruthotto, H.Kugel, J.Olesch, B.Fischer, J.Modersitzki, M.Burger, C.H. Wolters, Diffeomorphic susceptibility artifact correction of diffusion-weighted magnetic resonance images, Phys. Med. Biol. 57 (2012), 5715.
43. B.Lanfer, M.Scherg, M.Dannhauer, T.R.Knösche, M.Burger, C.H.Wolters, Influence of skull segmentation inaccuracies on EEG source analysis, NeuroImage 62 (2012), 418-431.
44. F.Lucka, S.Pursiainen, M.Burger, C.H.Wolters, Hierarchical Bayesian inference for the EEG inverse problem using realistic FE head models: Depth localization and source separation for focal primary currents, NeuroImage 61 (2012), 1364-1382.
45. M.Burger, M.Franek, C.Schönlieb, Regularized regression and density estimation based on optimal transport, Appl. Math. Res. Expr. 2 (2012), 209-253.
46. M.Burger, B.Schlake, M.Wolfram, Nonlinear Poisson-Nernst-Planck equations for ion flux through confined geometries, Nonlinearity 25 (2012), 961.
47. F.Gigengack, L.Ruthotto, M.Burger, C.Wolters, X.Jiang, K.Schäfers, Motion correction in dual gated cardiac PET using mass preserving image registration, IEEE Trans. Med. Imaging 31 (2012), 698-712
48. R.Stück, M.Burger, T.Hohage, The iteratively regularized Gauss-Newton method with convex constraints and applications in 4pi-microscopy, Inverse Problems 28 (2012), 015012.
49. M.Möller, T.Wittman, A.Bertozzi, M.Burger, A variational approach for sharpening high-dimensional images, SIAM J. Imag. Sci. 5 (2012), 150-178.
50. M.Burger, P.Markowich, J.Pietschmann, Continuous limit of a crowd motion and herding model: Analysis and numerical simulations, Kinetic and Related Methods 4 (2011), 1025-1047.
51. M.Burger, M.Möller, M.Benning, S.Osher, An adaptive inverse scale space method for compressed sensing, Mathematics of Computation 82 (2013), 269-299.
52. M.Burger, Inverse problems in ion channel modeling, Inverse Problems 27 (2011), 083001.
53. C.Mallidis, J.Wistuba, B.Bleisteiner, O.S.Damm, P.Groß, F.Wübbeling, C.Fallnich, M.Burger, S.Schlatt, In situ visualization of damaged DNA in human sperm by Raman microspectroscopy, Human Reproduction 26 (2011), 1641-1649
54. M.Benning, M.Burger, Error estimation with general fidelities, Electronic Trans. Numer. Anal. 38 (2011), 44-68.
55. M.Burger, M.DiFrancesco, J.F.Pietschmann, B.Schlake, Nonlinear cross-diffusion with size exclusion, SIAM J. Math. Anal. 42 (2010), 2842-2871.
56. M.Burger, K.A.Mardal, B.F.Nielsen, Stability issues of the inverse transmembrane potential problem in electrocardiography, Inverse Problems (2010), 105012.
57. M.T.Wolfram, M.Burger, Z.Siwy, Mathematical modeling and simulation of nanopore blocking by precipitation, J.Phys.: Cond. Mat. 22 (2010), 454101.
58. T.Mues, M.Burger, A.Heuer, I.Lubashevsky, A model of oscillatory zoning in two dimensions: Simulation and mode analysis, Phys. Rev. E 81 (2010)
59. M.Burger, N.Matevosyan, M.T.Wolfram, A level set based shape optimization method for an elliptic obstacle problem, Math. Mod. Meth. Appl. Sci. 21 (2011), 619-649.
60. X.Zhang, M.Burger, X.Bresson, S.Osher, Bregmanized nonlocal regularization for deconvolution and sparse reconstruction, SIAM J. Imaging Sci. 3 (2010), 253-276.
61. X.Zhang, M.Burger, S.Osher, A unified primal-dual algorithm framework based on Bregman iteration, J. Sci. Comp. 3 (2010), doi: 10.1007/s10915-010-9408-8.

62. M.Burger, J.Carrillo, M.T.Wolfram, A mixed finite element method for nonlinear diffusion equations, Kinetic and Related Methods 3 (2010), 59-83.
63. C.Brune, A.Sawatzky, M.Burger, Primal and dual Bregman methods with application to optical nanoscopy, IJCV 92 (2011), 211-229. doi: 10.1007/s11263-010-0339-5.
64. O.Steinsträter, S.Sillekens, M.Junghöfer, M.Burger. C.Wolters, Sensitivity of beamformer source analysis to deficiencies in forward modeling, Human Brain Mapping (2010), doi: 10.1002/hbm.20986
65. M.Burger, L.He, C.Schönlieb, Cahn-Hilliard inpainting and a generalization for grayvalue images, SIAM J. Imaging Sciences 2 (2009), 1129-1167
66. M.Bachmayr, M.Burger, Iterative total variation schemes for nonlinear inverse problems, Inverse Problems 25 (2009), 105004
67. M.Burger, R.Pinnau, A globally convergent Gummel map for optimal dopant profiling, Math. Models Meth. Appl. Sci. 19 (2008), 769-786.
68. M.Burger, R.Pinnau, M.Wolfram, On-/Off-State design of semiconductor doping profiles, Comm. Math. Sci. 6 (2008), 1021-1041.
69. M.Burger, C.Stöcker, A. Voigt, Finite element based level set methods for higher order flows, J. Sci. Comp. 35 (2008), 77-98.
70. M.Burger, M. Di Francesco, Large time behavior of nonlocal aggregation models with nonlinear diffusion, Networks and Heterogeneous Media 3 (2008), 749-785.
71. M.Burger, S.Y.Chu, P.Markowich, C.Schönlieb, The Willmore functional and instabilities in the Cahn-Hilliard equation, Commun. Math. Sci. 6 (2008), 309-329.
72. M.Burger, Y.Dolak-Struss, C.Schmeiser, Asymptotic analysis of an advection-dominated chemotaxis model in multiple spatial dimensions, Commun. Math. Sci. 6 (2008), 1-28.
73. M.Burger, Finite element approximation of elliptic partial differential equations on implicit surfaces, Comp. Vis. Sci. (2008), 87-100.
74. P.Favaro, S.Soatto, M.Burger, S.Osher, Shape from defocus via diffusion, IEEE Trans. PAMI 30 (2008), 518-531.
75. M.Burger, E.Resmerita, L.He, Error estimation for Bregman iterations and inverse scale space methods in image restoration, Computing 81 (2007), 109-135
76. M.Burger, K.Frick, S.Osher, O.Scherzer, Inverse total variation flow, SIAM Multiscale Modelling and Simulation 6 (2007), 366-395.
77. M.Burger, B.Eisenberg, H.Engl, Inverse problems related to ion channel selectivity, SIAM J. Appl. Math 67 (2007), 960-989.
78. M.Burger, F.Hausser, C.Stöcker, A.Voigt, A level set approach to anisotropic flows with curvature regularization, J. Comp. Phys. 225 (2007), 183-205.
79. H.Ben Ameur, M.Burger, B.Hackl, On some geometric inverse problems in linear elasticity, Math. Meth. Appl Sci. 30 (2007), 625-647.
80. M.Burger, V.Capasso, D. Morale, On an aggregation model with long and short range interactions, Nonlinear Analysis. Real World Applications 8 (2007), 939-958.
81. M.Burger, R.Stainko, Phase-field relaxation of topology optimization with local stress constraints, SIAM J. Control Optim. 45 (2006), 1447-1466.
82. M.Burger, M. Di Francesco, Y.Dolak-Struss, The Keller-Segel model for chemotaxis: linear vs. nonlinear diffusion, SIAM J. Math. Anal. 38 (2006), 1288-1315.
83. M.Burger, V.Capasso, L.Pizzocchero, Mesoscale averaging of nucleation and growth processes, Multiscale Modelling and Simulation 5 (2006), 564 - 592.

84. L.He, S.Osher, M.Burger, Iterative total variation regularization with non-quadratic fidelity, J. Math. Imag. Vision 26 (2006), 167-184.
85. M.Burger, G.Gilboa, S.Osher, J.Xu, Nonlinear inverse scale space methods, Comm. Math. Sci. 4 (2006), 179-212.
86. M.Burger, Surface diffusion including adatoms, Comm. Math. Sci. 4 (2006), 1-51.
87. M.Burger, B.Kaltenbacher, Regularizing Newton-Kaczmarz methods for nonlinear ill-posed problems, SIAM J. Numer. Anal. 44 (2006), 153-182.
88. S.Osher, M.Burger, D.Goldfarb, J.Xu, W.Yin, An iterative regularization method for total variation based image restoration, Multiscale Modelling and Simulation 4 (2005), 460-489.
89. M.Burger, Numerical simulation of anisotropic surface diffusion with curvature-dependent energy, J. Comp. Phys. 203 (2005), 602-625.
90. M.Burger, S.Osher, A survey on level set methods for inverse problems and optimal design, European J. Appl. Math. 16 (2005), 263-301.
91. M.Burger, A.Hofinger, Greedy algorithms for neural network training with data noise, Computing 74 (2005), 1-22.
92. M.Burger, H.W.Engl, A.Leitao, P.Markowich, On inverse problems for semiconductor equations, Milan J. Math. 72 (2004), 273-314.
93. M.Burger, S.Osher, Convergence rates of convex variational regularization, Inverse Problems 20 (2004), 1411-1421.
94. H.Ben Ameur, M.Burger, B.Hackl, Level set methods for geometric inverse problems in linear elasticity, Inverse Problems 20 (2004), 673-696.
95. M.Burger, Levenberg-Marquardt level set methods for inverse obstacle problems, Inverse Problems 20 (2004), 259-282.
96. M.Burger, S.Osher, E.Yablonovitch, Inverse problem techniques for the design of photonic crystals, IEICE Transactions on Electronics 87 C (2004), 258-265.
97. M.Burger, V.Capasso, A.Micheletti, *Optimal control of polymer morphologies,* J. Eng. Math. 49 (2004), 339-358.
98. M.Burger, B.Hackl, W.Ring, Incorporating topological derivatives into level set methods, J. Comp. Phys. 194 (2004), 344-362.
99. M.Burger, Growth of multiple crystals in polymer melts , European J. Appl. Math. 15 (2004), 347-363.
100. M.Burger, R.Pinnau, Fast optimal design of semiconductor devices, SIAM J. Appl. Math. 64 (2003), 108-126.
101. M.Burger, A framework for the construction of level set methods for shape optimization and reconstruction, Interfaces and Free Boundaries 5 (2003), 301-329.
102. M.Burger and W.Mühlhuber, Numerical approximation of an SQP-type method for parameter identification, SIAM J. Numer. Anal. 40 (2002), 1775 - 1797.
103. M.Burger and W.Mühlhuber, Iterative regularization of parameter identification problems by SQP methods, Inverse Problems 18 (2002), 943-970.
104. M.Burger and A.Neubauer, Analysis of Tikhonov regularization for function approximation by neural networks, Neural Networks 16 (2003), 79-90.
105. M.Burger, H.W. Engl, J.Haslinger, and U.Bodenhofer, Regularized data-driven construction of fuzzy controllers, J. Inverse & Ill-posed Problems 10 (2002), 319-344.

106. M.Burger, V.Capasso, and C.Salani, Modelling multi-dimensional crystallization of polymers in interaction with heat transfer, Nonlinear Analysis, Series B, 3 (2002), 139-160.

107. M.Burger, V.Capasso, and G.Eder, Modelling crystallization of polymers in temperature fields, ZAMM 82 (2002), 51-63.

108. A.Micheletti and M.Burger, Stochastic and deterministic simulation of nonisothermal crystallization of polymers, J.Math.Chem. 30 (2001), 169-193.

109. M.Burger, H.W.Engl, P.Markowich and P.Pietra, Identification of doping profiles in semiconductor devices, Inverse Problems 17 (2001), 1765-1795.

110. M.Burger, A level set method for inverse problems, Inverse Problems 17 (2001), 1327-1356.

111. M.Burger and A.Neubauer, Error bounds for approximation with neural networks, Journal of Approximation Theory 112 (2001), 235-250.

112. M.Burger and O.Scherzer, Regularization methods for blind deconvolution and blind source separation problems, Mathematics of Control, Signals and Systems 14 (2001), 358-383.

113. M.Burger, Iterative regularization of a parameter identification problem occurring in polymer crystallization, SIAM J. Numer. Anal. 39 (2001), 1029-1055.

114. M.Burger and V.Capasso, Mathematical modelling and simulation of non-isothermal crystallization of polymers, Math. Models and Methods in Appl. Sciences 11 (2001), 1029-1054.

115. M.Burger and H.W.Engl, Training neural networks with noisy data as an ill-posed problem, Adv. Comp. Math. 13 (2000), 335-354.

116. M.Burger, V.Capasso, and H.W.Engl, Inverse problems related to crystallization of polymers, Inverse Problems 15 (1999), 155-173.

BOOK CHAPTERS AND SURVEYS

1. G.Albi, M.Burger, J.Haskovec, P.Markowich, M.Schlottbom, Discrete and Continuum modelling of biological network formation, in N.Bellomo, P.Degond, E.Tadmor, Active Particles – Theory, Model, Applications, Birkhäuser, 2017, to appear.
2. M.Burger, Bregman distances in inverse problems and partial differential equations, in: J.Hiriard-Urrurty, A.Korytowski, H.Maurer, M.Szymkat: Advances in Mathematical Modeling, Optimization, and Optimal Control, Springer, 2016.
3. M.Burger, H.Dirks, L.Frerking, On optical flow models for variational motion estimation, in M.Bergounioux, G.Peyre, C.Schnörr, J.Caillau, T.Haberkorn, eds., Variational Methods, RICAM Series on Computational and Applied Mathematics, 2016, 226-252.
4. M.Burger, S.Osher, Multiscale variational imaging, ICIAM Intelligencer, 2015.
5. M.Burger, J.Modersitzki, D.Tenbrinck, Mathematical methods in biomedical imaging, GAMM Mitteilungen 37 (2014), 154-183.
6. M.Burger, H.Dirks, J.Müller, Inverse problems in imaging, in: M.Cullen et al, Large Scale Inverse Problems, De Gruyter, 2013.
7. M.Burger, S.Osher, A guide to the TV zoo, in: M.Burger, S.Osher, Level-Set and PDE-based Reconstruction Methods, Springer, 2013.

8. C.Brune, A.Sawatzky, T.Kösters, F.Wübbeling, M.Burger, Forward-backward EM-TV bethods for Inverse Problems with Poisson noise, in: M.Burger, S.Osher, Level-Set and PDE-based Reconstruction Methods, Springer, 2013.
9. M.Burger, B.Kaltenbacher, A.Neubauer, Iterative solution methods, in: O.Scherzer, ed.: Handbook of Mathematical Methods in Medical Imaging, Springer, 2010.
10. V.Capasso, M.Burger, A.Micheletti, C.Salani, Mathematical models for polymer crystallization proceses , in: V.Capasso, ed., Mathematical modelling for polymer industry (Springer, 2002), 167-242.

PUBLICATIONS IN PROCEEDINGS

1. M.Burger, K.Papafitsoros, E.Papoutselis, C.Schönlieb, Infimal convolution regularisation functionals of BV and Lp Spaces: The case p=infinity, Springer series: IFIP Advances in Information and Communication Technology, System Modeling and Optimization (CSMO 2015).
2. E.M.Brinkmann, M.Burger, J.Grah, Regularization with Sparse Vector Fields: From Image Compression to TV-type Reconstruction, SSVM 2015, to appear.
3. M.Burger, L.Eckardt, G.Gilboa, M.Möller, Spectral Representations of One-Homogeneous Functionals, SSVM 2015, to appear.
4. S.Suhr, D.Tenbrinck, M.Burger, J.Modersitzki, Registration of noisy images via Maximum-a-posteriori estimation, in: S.Ourselin, M.Modat, eds, WBIR 2014, Springer LNCS 8545 (2014), 234-243.
5. M.Burger, R.Pinnau, M.Fouego, S.Rau, Optimal control of self-consistent classical and quantum particle systems, in: G.Leugering et al, eds., Trends in PDE-constrained Optimization, Birkhäuser, Basel, 2014
6. M.Burger, M.DiFrancesco, P.Markowich, M.T.Wolfram, On a mean field game optimal control approach modeling fast exit scenarios in human crowds, 52 IEEE Conference on Decision and Control (2013).
7. F.Gigengack, L.Ruthotto, X.Jiang, J.Modersitzki, M.Burger, S.Hermann, K.Schäfers, Atlas-based Whole-body PET-CT Segmentation Using a Passive Contour Distance, in: B.Menze et al, eds, Medical Computer Vision. Recognition Techniques and Applications in Medical Imaging. Second International MICCAI Workshop, MCV 2012. Revised Selected Papers, Springer, 82-92.
8. F.Gigengack, L.Ruthotto, J.Modersitzki, M.Burger, C.Wolters, X.Jiang, K.Schäfers, A simplified pipeline for motion correction in dual gated cardiac PET, Bildverarbeitung für die Medizin, Springer, Berlin, 2012, 51-56.
9. M.Clerc, C.H.Wolters, J.Vorwerk, M.Burger, Comparison of boundary element and finite element approaches to the EEG forward problem, BMT 2012, 57.
10. F.Lucka, S.Pursiainen, M.Burger, C.Wolters, Hierarchical fully Bayesian inference for EEG/MEG combination using realistic FE head models, Neurovisionen 8 (2012), 82.
11. M.Fouego, M.Burger, Optimal dopant profiling with TV penalty, PAMM 12 (2012), 679-680.
12. L.Reips, R.Engbers, M.Burger, Dynamic PET Reconstruction based on a reaction-diffusion model, PAMM 12 (2012), 683-684.
13. J.Müller, C.Brune, A.Sawatzky, T.Kösters, K.P.Schäfers, M.Burger, Reconstruction of short time PET scans using Bregman iterations, IEEE NSS/MIC Conference Record (2011), 2383-2385.

14. R.Engbers, M.Benning, P.Heins, K.P.Schäfers, M.Burger, Sparse recovery in myocardial bloodflow quantification via PET, IEEE NSS/MIC Conference Record (2011), 3742-3744.
15. F.Gigengack, L.Ruthotto, M.Burger, C.Wolters, X.Jiang, K.Schäfers, Mass preserving motion correction of PET: displacement field vs. spline transformation, IEEE NSS/MIC Conference Record (2011), 3088-3090.
16. F.Gigengack, L.Ruthotto, M.Burger, C.Wolters, X.Jiang, K.Schäfers, Mass preserving motion correction of dual gated cardiac PET, IEEE NSS/MIC Conference Record (2011), 3206-3208.
17. M.Benning, P.Heins, M.Burger, A Solver for Dynamic PET Reconstructions based on forward-backward splitting, Proceedings of the 8th International Conference of Numerical Analysis and Applied Mathematics, AIP Conference Proceedings 1281 (2010), 1967-1970.
18. A.Sawatzky, M.Burger, Edge-Preserving regularization for the deconvolution of Biological Images in Nanoscopy, Proceedings of the 8th International Conference of Numerical Analysis and Applied Mathematics, AIP Conference Proceedings 1281 (2010), 1983-1986.
19. M.Dawood, C.Brune, X.Jiang, M.Burger, O.Schober, M.Schäfers, K.Schäfers, A continuity equation based optical flow method for cardiac motion correction in 3D PET, data, Proceedings of the MICCAI 2010, Springer LNCS 6326, 2010, 88-97.
20. F.Gigengack, L.Ruthotto, M.Burger, C.H.Wolters, X.Jiang, K.P.Schäfers, Motion correction in cardiac PET using mass-preserving registration, IEEE NSS/MIC Conference Record (2011), 3317-3319.
21. A.Sawatzky, C.Brune, J.Mueller, M.Burger, Total variation processing of images with Poisson statistics, in: X.Jiang, N.Petkov, eds., Proc. 13th International Conference on Computer Analysis of Images and Patterns, Springer LNCS 5702 (2009), 533-540.
22. C.Schönlieb, A.Bertozzi, M.Burger, L.He, Image inpainting using a fourth-order total variation flow, Proc. Int. Conf. SampTA09, Marseille, 2009
23. M.Schellmann, S.Gorlatch, D.Meiländer, T.Kösters, F.Wübbeling, M.Burger, Parallel Medical Image Reconstruction: From Graphics Processors to Grids. *10th International Conference PaCT-2009*
24. C.Brune, A.Sawatzky, M.Burger, Bregman EM-TV Methods with applications to nanoscopic imaging, in: *Scale-Space and Variational Methods*, Springer, 2009.
25. M.Burger, A note on sparse reconstruction methods, J. Phys. Conf. Series (2008), 012002.
26. M.Burger, Y.Landa, N.Tanushev, R.Tsai, Discovering point sources in unknown environments, Proceedings of WAFR, 2008.
27. A.Sawatzky, C.Brune, F.Wübbeling, T.Kösters, K.Schäfers, M.Burger, Accurate EM-TV algorithm in PET with low SNR, in: *IEEE Nuclear Science Conference Record*, 2008, 5133-5137
28. M.Benning, T.Kösters, F.Wübbeling, K.Schäfers, M.Burger, A nonlinear variational model for improved quantification of myocardial blood flow using dynamic $H_2{}^{15}O$-PET, in: *IEEE Nuclear Science Conference Record*, 2008, 4472-4477.
29. K.Arning, M.Burger, B.Eisenberg, H.Engl, L.He, Inverse problems related to ion channels, PAMM Special Issue: ICIAM 07 (2007**),** 1120801-1120802
30. M.Burger, L.He, P.Markowich, C.Schönlieb, A generalization of Cahn-Hilliard inpainting for gray-value images, PAMM Special Issue: ICIAM 07 (2007), 1041905-1041906

31. M.Burger, S.Y.Chu, P.Markowich, C.Schönlieb, Cahn-Hilliard inpainting and the Willmore functional, PAMM Special Issue: ICIAM 07 (2007), 1011209-1011210
32. M.Burger, M.Hinze, R.Pinnau, Optimization models for semiconductor dopant profiling, in C.Cercignani, E.Gabetta, eds., *Transport Phenomena and Kinetic Theory: Applications to Gases, Semiconductors, Photons, and Biological Systems*, Birkhäuser, Boston, 2006.
33. B.Berkels, M.Burger, M.Droske, O.Nemitz, M.Rumpf, Cartoon extraction based on anisotropic image classification. In *Vision, Modeling, and Visualization Proceedings*, 2006, 293-300.
34. M.Burger, V.Capasso, A.Micheletti, An extension of the Avrami-Kolmogorov formula to inhomogeneous birth-and-growth processes, in: G.Aletti et. al., eds., *Deterministic and Stochastic Modelling in Biomedicine, Economics, and Industry*, Springer, 2006.
35. R.Stainko, M.Burger, A one-shot approach to topology optimization with stress constraints, in: M.P.Bendsoe, N.Olhoff, O.Sigmund, IUTAM Symposium on Topological Design Optimization of Structures, Machines, and Materials, Springer, 2006.
36. M.Burger, A model hierarchy for surface diffusion: the small slope case, in F.Breitenecker, I.Troch, eds. Proceedings of 5th MATHMOD, Vienna, 2006, ISBN 3-901608-30-3
37. M.T.Wolfram, M.Burger, Inverse dopant profiling for highly doped semiconductor devices, in F.Breitenecker, I.Troch, eds. Proceedings of 5th MATHMOD, Vienna, 2006, ISBN 3-901608-30-3
38. M.Burger, M.Hintermüller, Projected gradient flows for BV / level set relaxation, PAMM 5 (2005), 11-14.
39. M.Burger, G.Gilboa, S.Osher, J.Xu, Nonlinear inverse scale space methods for image restoration, in: N. Paragios et. al., eds. *Variational and Level Set Methods 2005* Springer LNCS 3752 (Springer, Berlin, 2005), 26-35.
40. H.Gu, M.Burger, Symbolic preprocessing of finite element methods for parameter-dependent geometric differential equations, Proceedings of the Workshop on Symbolic-Numerical Computation SNC 05.
41. P.Favaro, M.Burger, and S.Soatto, Scene and motion reconstruction from defocused and motion blurred images via anisotropic diffusion, in: T.Pajdla, J.Matas, eds., *Computer Vision - ECCV 2004, Part I (Springer, Berlin, 2004),257-269*.
42. M.Burger, Growth and impingement in polymer melts , in: P.Colli et. al., eds., *Free Boundary Problems* (Birkhaeuser, Basel, 2003), 65-74.
43. M.Burger, P.Markowich, Model reduction for semiconductor inverse dopant profiling, in: I.Troch, F.Breitenecker, eds., *Proceedings of the 4th IMACS Symposium on Mathematical Modelling* (Vienna, 2003, electronic, ISBN 3-901608-24-9).
44. M.Burger, H.W.Engl, and P.Markowich, Inverse doping problems for semiconductor devices, Recent Progress in Computational and Applied PDEs (Kluwer Academic/Plenum Publishers, 2002), 27-38.
45. M.Burger, V.Capasso and A.Micheletti, *Mathematical modelling of the crystallization process of polymers*, in: E.A.Lipitakis, *HERCMA 2001*, Proceedings of the 5th Hellenic European Conference on Computer Mathematics and its Applications (LEA, Athens, 2002), 51-63. Reprint in HERMIS International Journal 3 (2003), 135-164.
46. J.Haslinger, U.Bodenhofer, and M.Burger, *Data-Driven construction of sugeno controllers: analytical aspects and new numerical methods* , in: *Proceedings of the joint 9th IFSA World Congress and 20th NAFIPS Int. Conf.* (Vancouver 2001, ISBN 0-7803-7079-1), 239-244.

47. J.Haslinger, U.Bodenhofer, and M.Burger, *Tuning of fuzzy systems as an ill-posed problem* in: M. Anile, V. Capasso, A. Greco (eds.), *Progress in Industrial Mathematics at ECMI 2000* (Mathematics in Industry, Vol. 1, Springer, Berlin, 2002), 493-498.
48. M.Burger, V.Capasso, G.Eder, and H.W.Engl, *Modelling and parameter-identification in non-isothermal crystallization of polymers*, in: L. Arkeryd, J. Bergh, P. Brenner, and R. Pettersson (eds.), Progress in Industrial Mathematics at ECMI 98, Teubner, Stuttgart, Leipzig, 1999,114-121.

MONOGRAPHS AND EDITED VOLUMES

- G.Aletti, M.Burger, A.Micheletti, D.Morale, eds., *Deterministic and Stochastic Modelling in Biomedicine, Economics, and Industry*, Springer, 2006.
- M.Burger, S.Osher, eds., *Level Set and PDE-Based Reconstruction Methods*, Springer LNM CIME Subseries, 2013.
- M.Burger, R.Pinnau, *Optimization Models for Semiconductor Devices*, Birkhäuser, 2016, in preparation