

1 List of publications (1996-2024)

1.1 Monographs

- [1] B. Kaltenbacher, T. Schuster and A. Wald (Eds.). Time-dependent problems in Imaging and Parameter Identification. Springer, Heidelberg, 2021.
- [2] U. Gabbert, R. Lammering, T. Schuster, M. Sinapius, and P. Wierach. Lamb-Wave Based Structural Health Monitoring in Polymer Composites. In *Research Topics in Aerospace*, Springer, Heidelberg, 2018.
- [3] B. Littau, J. Tepe, G. Schober, S. Kremling, T. Hochrein, P. Heidemeyer, T. Schuster, and M. Bastian. *Entwicklung und Evaluierung der Potenziale von Terahertz-Tomografie-Systemen*. SKZ - Das Kunststoffzentrum (Hrsg.), Shaker Verlag, Aachen, 2016.
- [4] T. Schuster, B. Kaltenbacher, B. Hofmann, and K. Kazimierski. *Regularization Methods in Banach Spaces*. In Radon Series on Computational and Applied Mathematics, deGruyter, Berlin, 2012.
- [5] T. Schuster. *The Method of Approximate Inverse: Theory and Applications*. In Lecture Notes in Mathematics, vol. 1906, Springer, Berlin-Heidelberg-NewYork, 2007.

1.2 Contributions to monographs

- [1] R. Klein, T. Schuster and A. Wald. Sequential subspace optimization for recovering stored energy functions in hyperelastic materials from time-dependent data. *Time-dependent problems in Imaging and Parameter Identification*, B. Kaltenbacher, T. Schuster, A. Wald (Eds.), Springer, 2021.
- [2] B. Kaltenbacher, T.T.N. Nguyen, A. Wald and T. Schuster. Parameter identification for the Landau-Lifshitz-Gilbert equation in Magnetic Particle Imaging. *Time-dependent problems in Imaging and Parameter Identification*, B. Kaltenbacher, T. Schuster, A. Wald (Eds.), Springer, 2021.
- [3] E.Y. Derevtsov, Y.S. Volkov and T. Schuster. Integral operators at settings and investigations of tensor tomography problems. *Continuum Mechanics, Applied Mathematics and Scientific Computing: Godunov's Legacy*, G.V. Demidenko, E. Romenski, E. Toro, M. Dumbser (Eds.), Springer, 2020.
- [4] T. Schuster. The importance of the Radon transform in vector field tomography. In *The first 100 years of the Radon Transform*, R. Ramlau, O. Scherzer (Eds.), Springer, 2019.

- [5] A. Wald and T. Schuster. Tomographic terahertz imaging using sequential subspace optimization. In *Trends in Parameter Identification for Mathematical Models*, B. Hofmann, A. Leitao, J. Zubelli (Eds.), Birkhäuser / Springer, 2018.
- [6] N. Kong, A. Sanders, M. Rösner, R. Friedrich, F. Dirksen, E. Bauma, T. Schuster, R. Lammering and J.P. Wulfsberg. Functional integrated feed-units based on flexible mechanisms in small machine tools for small workpieces. In *Small Machine Tools for Small Workpieces*, J.P. Wulfsberg, A. Sanders (Eds.), Series: Lecture Notes in Production Engineering, Springer, 2017.
- [7] T. Schuster. 20 Years of imaging in vector field tomography: a review. In *Mathematical Methods in Biomedical Imaging and Intensity-Modulated Radiation Therapy (IMRT)*, Y. Censor, M. Jiang, A. K. Louis (Eds.), Series: Publications of the Scuola Normale Superiore, CRM Series , Vol. 7, Birkhäuser, 2008.

1.3 Articles in journals with peer review

- [1] A. Belenkin, M. Hartz and T. Schuster. A note on Γ -convergence of Tikhonov functionals for nonlinear inverse problems. *Numerical Functional Analysis and Optimization*, under review, 2024.
- [2] M. Burger, T. Schuster and A. Wald. Ill-posedness of time-dependent inverse problems in Lebesgue-Bochner spaces. *Inverse Problems*, 40(8), 2024.
- [3] D. Rothermel and T. Schuster. Development of a generalized photothermal measurement model for the layer thickness determination of multi-layered coating systems. *Applied Sciences*, 13(7), 2023.
- [4] C. Meiser, A. Wald and T. Schuster. Learned anomaly detection with terahertz radiation in inline process monitoring. *Sensing and Imaging*, 23(1), 2022.
- [5] L. Vierus and T. Schuster. Well-defined forward operators in dynamic diffractive tensor tomography using viscosity solutions of transport equations. *Electronic Transactions on Numerical Analysis*, 57:80-100, 2022.
- [6] R. Rothermel, W. Panfilenko, P. Sharma, A. Wald, T. Schuster, A. Jung and S. Diebels. A method for determining the parameters in a rheological model for viscoelastic materials by minimizing Tikhonov functionals. *Applied Mathematics in Science and Engineering*, 30(1):141-165, 2022.

- [7] D. Rothermel, T. Schuster, R. Schorr and M. Peglow. Determination of the temperature-dependent thermal material properties in the cooling process of steel plates. *Mathematical Problems in Engineering*, DOI:10.1155/2021/6653388, Article ID 6653388, 2021.
- [8] D. Rothermel and T. Schuster. Solving an inverse heat convection problem with an implicit forward operator by using a projected quasi-Newton method. *Inverse Problems*, 37(4):36pp, 2021.
- [9] E.Y. Derevtsov, Y.S. Volkov and T. Schuster. Generalized attenuated ray transforms and their integral angular moments. *Applied Mathematics and Computation*, Article ID 125494, 2020.
- [10] F. Heber, F. Schöpfer, and T. Schuster. Acceleration of sequential subspace optimization in Banach spaces by orthogonal search directions. *J. Comp. Appl. Math.*, 345:1-22, 2019.
- [11] S. Diebels, T. Schuster and A. Wewior. Identifying elastic and viscoelastic material parameters by Tikhonov regularization. *Mathematical Problems in Engineering*, DOI:10.1155/2018/1895208, Article ID 1895208, 2018.
- [12] J. Seydel and T. Schuster. Identifying the stored energy of a hyperelastic structure from surface measurements by using an attenuated Landweber method. *Inverse Problems*, Special Issue: Dynamic Inverse Problems, 33(12):31pp, DOI:10.1088/1361-6420/aa8d91, 2017.
- [13] A. Katsevich, D. Rothermel, and T. Schuster. An improved exact inversion formula for solenoidal fields in cone beam vector tomography. *Inverse Problems*, 33(6):19pp, Special issue: 100 Years of the Radon transform, DOI:10.1088/1361-6420/aa58d5, 2017.
- [14] C. Schorr, L. Dörr, M. Maisl and T. Schuster. Registration of a priori information for computed laminography. *NDT&E International*, 86:106-112, 2017
- [15] A. Wald and T. Schuster. Sequential subspace optimization for nonlinear inverse problems. *J. Inv. Ill-Posed Prob.*, 25(1), DOI:10.1515/jiip-2016-0014, 2017.
- [16] J. Tepe and T. Schuster. A modified algebraic reconstruction technique taking refraction into account with an application in terahertz tomography. *Inverse Problems in Science and Engineering*, 25:1448-1473, DOI:10.1080/17415977.2016.1267168, 2017.
- [17] U. Schröder and T. Schuster. A numerical algorithm to determine the refractive index of an inhomogeneous medium from time-of-flight measurements, *Inverse Problems*, 32(8):35pp, DOI:10.1088/0266-5611/32/8/085009, 2016.

- [18] J. Seydel and T. Schuster. On the linearization of identifying the stored energy function of a hyperelastic material from full knowledge of the displacement field, *Math. Meth. Appl. Sci.*, 40(1):183-204, DOI: 10.1002/mma.3979, 2016.
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- [26] F. Schöpfer, F. Binder, A. Wöstehoff, T. Schuster, S.v. Ende, S. Föll, and R. Lammering. Accurate determination of dispersion curves of guided waves in plates by applying the matrix pencil method to laser vibrometer measurement data. *CEAS Aeronautical Journal*, Article ID 10.1007/s13272-012-0055-7, 2013.
- [27] T. Schuster, A. Rieder, and F. Schöpfer. The approximate inverse in action IV: semi-discrete equations in a Banach space setting. *Inverse Problems*, 28:19pp, 2012.
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- [33] T. Schuster and F. Schöpfer. Solving linear operator equations in Banach spaces non-iteratively by the method of approximate inverse. *Inverse Problems*, 26(8):19pp, 2010.
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1.4 Articles in proceedings

- [1] C. Meiser, T. Schuster and A. Wald. A classification algorithm for anomaly detection in terahertz tomography. In *International Conference on Large-Scale Scientific Computing*, Springer, pp. 393-401, 2021.
- [2] A.K. Louis, S.V. Maltseva, A.P. Polyakova, T. Schuster and I.E. Svetov. On solving the slice-by-slice three-dimensional 2-tensor tomography problems using the approximate inverse method. *J. Phys.: Conf. Ser.*, 1715, DOI:10.1088/1742-6596/1715/1/012036 , Article ID 012036, 2021.
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- [4] B. Littau, J. Tepe, S. Kremling, T. Schuster, T. Hochrein and P. Heidemeyer. Tomografische Bildgebung mit vollelektronischen Terahertz-Systemen zur Prüfung von Kunststoff-Bauteilen. *DACH-Jahrestagung 2015*, 2015.

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- [6] E. Bauma and T. Schuster. A hybrid approach to optimization of trajectories in micro manufacturing. *Proceedings in Applied Mathematics and Mechanics (PAMM)*, 14, 2014.
- [7] E. Derevtsov, I. Svetov, Y. Volkov, and T. Schuster. Numerical B-spline solution of 2D emission and vector tomography problems for media with absorption and refraction. *IEEE Proceedings 2008 Region 8 International Conference on Computational Technologies in Electrical and Electronics Engineering SIBIRCON-08*, Novosibirsk Scientific Center, Novosibirsk, Russia, July 21–25, pp. 212–217, 2008.
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1.5 Preprints

- [1] R. Rothermel and T. Schuster. Development and analysis of a Bayes inversion method to identify material parameters in viscoelastic structures. Work in progress, 2024.