

List of Publications

- 1) together with S.PRÖßDORF, *A spline collocation method for singular integral equations with piecewise continuous coefficients*. Integral Equations and Operator Theory 7, 1984, pp.536–560
- 2) *Reduktionsverfahren für singuläre Integralgleichungen mit stückweise stetigen Koeffizienten*. Mathematische Nachrichten 127, 1986, pp.125–143
- 3) together with S.PRÖßDORF, *On strongly elliptic singular integral operators with piecewise continuous coefficients*. Integral Equations and Operator Theory 8, 1985, pp.825–841
- 4) together with S.PRÖßDORF, *On spline Galerkin methods for singular integral equations with piecewise continuous coefficients*. Numerische Mathematik 48, 1986, pp.99–118
- 5) together with S.PRÖßDORF, *Strongly elliptic singular integral equations with piecewise continuous coefficients and the convergence of spline Galerkin and*

collocation methods. Constructive Theory of Functions, Proceedings of the Conference on the "Constructive Theory of Functions" in Varna, Publishing House of the Bulgarian Academy of Sciences, Sofia, 1984, pp.710–717

- 6) together with J.ELSCHNER, S.PRÖßDORF, G.SCHMIDT, *Spline approximation of singular integral equations*. Demonstratio Mathematica XVIII, No.3, 1985, pp.661–672
- 7) together with S.PRÖßDORF, *Stabilitätskriterien für Näherungsverfahren bei singulären Integralgleichungen in L^p* . Zeitschrift für Analysis und ihre Anwendungen 6, No.6, 1987, pp.539–558
- 8) *Quadraturformelverfahren für eindimensionale singuläre Integralgleichungen*. Seminar Analysis - Operator equations and numerical analysis, 1985/1986, Eds: S.Prößdorf and B.Silbermann, Berlin, Karl-Weierstraß-Institut für Mathematik, AdW der DDR, 1986, pp.147–186
- 9) together with S.PRÖßDORF, *On quadrature methods and spline approximation of singular integral equations*. Boundary Elements, Eds: C.A.Brebbia, G.Kuhn

and W.L.Wendland, Berlin, Heidelberg, New York, Springer-Verlag, 1987, pp.193–211

- 10) *Ein Quadraturformelverfahren für Mellin-Operatoren nullter Ordnung.* Mathematische Nachrichten 137, 1988, pp.321–354
- 11) together with S.PRÖßDORF, *Mellin techniques in the numerical analysis for one-dimensional singular integral equations.* Report, R-MATH-06/88, Berlin, Karl-Weierstraß-Institut für Mathematik, AdW der DDR, 1988
- 12) together with S.PRÖßDORF, *Quadrature and collocation methods for singular integral equations on curves with corners.* Zeitschrift für Analysis und ihre Anwendungen 8, No.3, 1989, pp.197–220
- 13) together with S.PRÖßDORF, *Quadrature methods for strongly elliptic Cauchy integral equations on an interval.* Operator Theory: Advances and Applications 41, Birkhäuser Verlag, Basel, 1989, pp.435–271
- 14) *A quadrature method for a Cauchy singular integral equation with a fixed singularity.* Seminar Analysis - Operator equations and numerical analysis, 1987/1988,

Eds: S.Pröbldorf and B.Silbermann, Berlin, Karl- Weierstraß- Institut für Mathematik, AdW der DDR, 1988, pp.107–117

- 15) together with S.PRÖBLDORF, *On an integral equation of the first kind arising from a cruciform crack problem*. Integral Equations and Inverse Problems, Eds: V.Petkov and R.Lazarov, Proceedings of the "Third Conference on Integral Equations and Inverse Problems" in Varna, Longman Scientific and Technical, Harlow, Essex, 1991, pp.210–219
- 16) *Stark elliptische singuläre Integralgleichungen vom Cauchy-Typ und Splineverfahren zur numerischen Lösung*. Dissertation (B)
- 17) *The invertibility of the double layer potential operator in the space of continuous functions defined on a polyhedron. The panel method*. Applicable Analysis 45, 1992, pp.135–177, Erratum: Applicable Analysis 56, 1995, pp.109–115
- 18) *On quadrature methods for the double layer potential equation over the boundary of a polyhedron*. Numerische Mathematik 66, 1993, pp.67–95
- 19) *Iterative solution of linear systems arising from the Nyström method for the*

double layer potential equation over curves with corners. Mathematical Methods in the Applied Sciences 16, 1993, pp.443–455

- 20) *Finite section method for the double layer potential operator over polyhedral boundaries.* Mathematische Nachrichten 157, 1992, pp.7–14
- 21) *Nyström's method and iterative solvers for the solution of the double layer potential equation over polyhedral boundaries.* SIAM Journal of Numerical Analysis 32, No.3, 1995, pp.924–951
- 22) together with B.KLEEMANN, *Nyström's method and iterative solvers for the solution of the double layer potential equation over polyhedral boundaries.* Preprint No.36, IAAS, Berlin, 1993 (Difference to publication 21: two new sections on the parallel implementation)
- 23) together with R.KIESER, B.KLEEMANN, *On a full discretization scheme for a hypersingular boundary integral equation over smooth curves.* Zeitschrift für Analysis und ihre Anwendungen 11, No.3, 1992, pp.385–396
- 24) *Piecewise polynomial collocation for the double layer potential equation over*

polyhedral boundaries. Boundary value problems and integral equations in non-smooth domains, Eds.: M. Costabel, M. Dauge, and S. Nicaise, Lecture Notes in Pure and Applied Mathematics Series 167, Marcel Dekker, New York, Basel, 1994, pp.219–253

- 25) *Piecewise polynomial collocation for the double layer potential equation over polyhedral boundaries. Part I: The wedge Part II: The cube*. Preprint No.8, IAAS, Berlin, 1992 (Difference to publication 24: a) Stability and convergence analysis in L^2 instead of L^∞ , b) slightly modified trial functions)
- 26) *A wavelet algorithm for the solution of the double layer potential equation over polygonal boundaries*. Journal of Integral Equations and Applications 7, 1995, pp. 47–97
- 27) *Error estimates and extrapolation for the numerical solution of Mellin convolution equations*. IMA Journal of Numerical Analysis 16, 1996, pp.217–255
- 28) *Error estimates and extrapolation for the numerical solution of Mellin convolution equations*. Preprint No. 125, WIAS, Berlin, 1994 (Difference to publication

- 27: a) generalized version for L^p with $1 \leq p \leq \infty$ instead of L^∞ , b) determination of logarithmic factors in convergence estimates)
- 29) *A wavelet algorithm for the boundary element solution of a geodetic boundary value problem.* Comput. Methods Appl. Mech. Engrg., Vol. 157, 1998, pp.267–287.
- 30) together with B. KLEEMANN, R. SCHNEIDER, *Multiscale methods for boundary integral equations and their application to boundary value problems in scattering theory and geodesy.* Notes on Numerical Fluid Mechanics Vol. 54, Proceedings of the 12th GAMM-Seminar Kiel on Boundary Elements: Implementation and Analysis of Advanced Algorithms, Eds.: W. Hackbusch, G. Wittum, Vieweg-Verlag, Braunschweig, Wiesbaden, 1996, pp.1–28.
- 31) *A wavelet algorithm for the solution of a singular integral equation over a smooth two-dimensional manifold.* J.Int.Equ.Appl.10, 1998
- 32) *On the stability of piecewise linear wavelet collocation and the solution of the double layer equation over polygonal curves.* **Boundary integral methods: numerical and mathematical aspects**, pp.177–215, Comput.Eng., 1, ed.M. Golberg, WIT Press/Comput.Mech.Publ., Boston, MA, 1999.

- 33) *Edge asymptotics for the radiosity equation over polyhedral boundaries.* Math. Methods Appl.Sci. 22, no. 3, 1999, pp.217–241.
- 34) *On a hierarchical three-point basis in the space of piecewise linear functions over smooth manifolds.* Proceedings of the 11. TMP, Klaffenbach (Chemnitz), March 1999, Problems and Methods in Mathematical Physics, (eds.: J.Elschner, I.Gohberg, and B.Silbermann) Birkhäuser Verlag, Basel, Operator Theory: Advances and Applications, Vol. 121, 2001, pp.442–470.
- 35) *Quadrature methods for 2D and 3D problems,* J. Comp. Appl. Math. 125, (1-2), 2000, pp.439–460.
- 36) together with S.EHRICH, *Piecewise linear wavelet collocation, Approximation of the boundary manifold and quadrature.* *Electr.Trans.Numer.Anal.* 12, 2001, pp.149–192.
- 37) together with R.SCHNEIDER, *On a quadrature algorithm for the piecewise linear wavelet collocation applied to boundary integral equations.* Mathematical Methods in the Applied Sciences 26, 2003, pp.937–979.

- 38) *A quadrature algorithm for wavelet Galerkin methods.* Preprint No. [667](#), WIAS, Berlin, 2001.
- 39) On wavelet algorithms for boundary element methods, Habilitation thesis, TU Chemnitz, 2000.
- 40) together with J. ELSCHNER, G. SCHMIDT, *Accurate FEM simulation and optimization of diffraction by polygonal profile gratings.* Proceedings of the EOS Topical meeting on Diffractive Optics, Budapest 2001, pp.88–89
- 41) together with P. JUNGHANNS, *A polynomial collocation method for Cauchy singular integral equations over the Interval.* [Electr. Trans. Numer. Anal.](#) 14, 2002, pp.63–109.
- 42) together with P. JUNGHANNS, *On Polynomial Collocation for Cauchy Singular Integral Equations with Fixed Singularities.* Integral Equations and Operator Theory 43, 2002, pp.155–176.
- 43) together with G. MASTROIANNI, C. FRAMMERTINO, *On polynomial collocation for second kind integral equations with fixed singularities of Mellin type.*

Numerische Mathematik 94, 2003, pp.333–365.

- 44) together with G.C.HSIAO, *Wavelet collocation methods for a first kind boundary integral equation in acoustic scattering*. Advances in Computational Mathematics 17, 2002, pp.281–308.
- 45) together with J.ELSCHNER, G.SCHMIDT, *FEM and its generalization for the diffraction by polygonal profile gratings*. Conference Proceedings, Mathematical Methods in Electromagnetic Theory 02, Kiev, Vol. 2, 2002, pp.398–400.
- 46) together with J.ELSCHNER, G.C.HSIAO, *Grating profile reconstruction based on finite elements and optimization techniques*. SIAM J.Appl.Math. 64, 2003, pp.525–545.
- 47) together with G.BRUCKNER, J.ELSCHNER, G.SCHMIDT, *Simulation, Optimization, and Reconstruction of Diffractive Structures*. Proceedings of the EOS Topical meeting on Diffractive Optics, Oxford 2003, pp.78–79.
- 48) together with P.DE BISSHOP, A.ERDMANN, *Simulation of the effect of a resist-surface bound air bubble on imaging in immersion lithography*. Proceed-

ings of SPIE, Vol.5754, Optical Microlithography XVIII, Bruce W.Smith (ed.), Microlithography 2005, pp.243–253.

- 49) *Local optimization of polygonal gratings for classical and conical diffraction.* Proceedings of the EOS Topical meeting on Diffractive Optics, Warsaw 2005, pp. 104–105.
- 50) together with M.BÄR, B.BODERMANN, H.GROSS, R.MODEL, M.WURM, *Mathematical modelling of indirect measurements in scatterometry.* Measurement 39, 2006, pp.782–794.
- 51) together with M.WURM, B.BODERMANN, F.SCHOLZE, C.LAUBIS, H.GROSS, *Untersuchungen zur Eignung der EUV-Scateromtrie zur quantitativen Charakterisierung periodischer Strukturen auf Photolithographiemasken.* DGaO-Proceedings 2006.
- 52) together with H.GROSS, *Sensitivity analysis for indirect measurement in scatterometry and the reconstruction of periodic grating structures,* Waves Random Complex Media 18, 2008, pp.129–149.

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- 54) together with G. SCHMIDT, B.H. KLEEMANN, *On a fast integral equation method for diffraction gratings*, Commun. Comput. Phys. 1, 2006, pp.984–1009.
- 55) together with H. GROSS, F. SCHOLZE, M. BÄR, U. DERSCH, *Optimal sets of measurement data for profile reconstruction in scatterometry*, in: Modeling Aspects in Optical Metrology, H. Bosse, B. Bodermann, R.M. Silver, eds., Proceedings of SPIE 6617, 2007, pp.66171B/1–66171B/12.
- 56) together with R. MODEL, H. GROSS, M. WURM, B. BODERMANN, *A scatterometry inverse problem in optical mask metrology*, in: 6th International Conference on Inverse Problems in Engineering: Theory and Practice, 15-19 June 2008, Dourdan (Paris), France, J. Phys. 135: Conf. Ser. Inst. Phys., 2008, pp.012071/1–012071/8.
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- 60) together with M.-A.HENN, R.MODEL, M.BÄR, M.WURM, B.BODERMANN, H.GROSS, *On numerical reconstructions of lithographic masks in DUV scatterometry*, in: Modeling Aspects in Optical Metrology II, H.Bosse, B.Bodermann, R.M.Silver, eds., Proceedings of SPIE 7390, SPIE, 2009, pp.7390OQ/1–7390OQ/11.
- 61) together with H.GROSS, M.BÄR, *Modelling and uncertainty estimates for numerically reconstructed profiles in scatterometry*, in: Proceedings of the Conference on Advanced Mathematical and Computational Tools in Metrology and Testing, Paris, June 23-25, 2008.

- 62) together with H. GROSS, J. RICHTER, M. BÄR, *Investigations on a robust profile model for the reconstruction of 2D periodic absorber lines in scatterometry*, J. Eur. Opt. Soc. Rapid Publ. 5, 2010, pp.10053/1–10053/7.
- 63) together with J. ELSCHNER, G.C. HSIAO, *Reconstruction of elastic obstacles from the far-field data of scattered acoustic waves*, Mem. Differential Equations Math. Phys. 53, 2011, pp.63–97.
- 64) together with H. GROSS, M.-A. HENN, M. BÄR, *Stochastic modeling aspects for an improved solution of the inverse problem in scatterometry*, in: Advanced Mathematical and Computational Tools in Metrology and Testing IX, Series on Advances in Mathematics for Applied Sciences vol. 84, F. Pavese, M. Bär, J.-R. Filtz, A.B. Forbes and L. Pendrill, K. Shirono (eds.), World Scientific, New Jersey, 2012, pp.202–209.
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- 66) *Shape derivatives for the scattering by biperiodic gratings*, Applied Numerical

Mathematics, 72, 2013, pp.19–32.

- 67) together with G.HU, *Scattering of time-harmonic electromagnetic plane waves by perfectly conducting diffraction gratings*, IMA Journal of Applied Mathematics 80, issue 2, 2015, pp.508–532,
- 68) together with T.ARNOLD, *Reflection of plane waves by rough surfaces in the sense of Born approximation*, Mathematical Methods in the Applied Sciences 37, issue 14, 2014, pp.2091–2111.
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- 70) together with H.GROSS, S.HEIDENREICH, M-A.HENN, and M.BÄR, *Modeling aspects to improve the solution of the inverse problem in scatterometry*, Discrete and Continuous Dynamical Systems Series S 8-3 (2015), pp.497–519.
- 71) together with G.HU and T.YIN, *Finite element method to fluid-solid interaction problems with unbounded periodic interfaces*, Numerical Methods for Partial

Differential Equations 32, (2016), pp.5–35.

- 72) together with T. YIN and L. XU, *A BIE-based DtN-FEM for Fluid-Solid Interaction Problems*, Journal of Computational Mathematics 36, (2018), pp.47–69.
- 73) together with C. BRÉE, D. GAILEVIČIUS, V. PURLYS, G.G. WERNER, K. STALIUNAS, G. SCHMIDT, and M. RADZIUNAS, *Chirped photonic crystal for spatially filtered optical feedback to a broad-area laser*, Journal of Optics (IOP Publishing Journal) 20, issue 9 (2018), 095805.
- 74) together with G. HU, *Acoustic scattering from locally perturbed periodic surfaces*, Preprint No. 2522, WIAS, Berlin, 2018,