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List of Publications

Articles in Journals:

- [1] Dirk Pauly and Walter Zulehner. The elasticity complex: compact embeddings and regular decompositions. *Applicable Analysis*, 102(16):4393–4421, 2023. doi:10.1080/00036811.2022.2117497.
- [2] Alexander Beigl, Jarle Sogn, and Walter Zulehner. Robust preconditioners for multiple saddle point problems and applications to optimal control problems. *SIAM J. Matrix Anal. Appl.*, 41(4):1590–1615, 2020. doi:10.1137/19M1308426.
- [3] Dirk Pauly and Walter Zulehner. The divDiv-complex and applications to biharmonic equations. *Appl. Anal.*, 99(9):1579–1630, 2020. doi:10.1080/00036811.2018.1542685.
- [4] Alexander Beigl, Otmar Scherzer, Jarle Sogn, and Walter Zulehner. Preconditioning inverse problems for hyperbolic equations with applications to photoacoustic tomography. *Inverse Problems*, 36(1):014002, 19, 2020. doi:10.1088/1361-6420/ab3d08.
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- [6] Jarle Sogn and Walter Zulehner. Schur complement preconditioners for multiple saddle point problems of block tridiagonal form with application to optimization problems. *IMA J. Numer. Anal.*, 39(3):1328–1359, 2019. doi:10.1093/imanum/dry027.
- [7] Katharina Rafetseder and Walter Zulehner. A decomposition result for Kirchhoff plate bending problems and a new discretization approach. *SIAM J. Numer. Anal.*, 56(3):1961–1986, 2018. doi:10.1137/17M1118427.
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- [10] Wolfgang Krendl, Katharina Rafetseder, and Walter Zulehner. A decomposition result for biharmonic problems and the Hellan-Herrmann-Johnson method. *Electron. Trans. Numer. Anal.*, 45:257–282, 2016. URL: <http://etna.ricam.oeaw.ac.at/vol.45.2016/pp257-282.dir/pp257-282.pdf>.
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- [12] Roman Andreev, Otmar Scherzer, and Walter Zulehner. Simultaneous optical flow and source estimation: space-time discretization and preconditioning. *Appl. Numer. Math.*, 96:72–81, 2015. doi:10.1016/j.apnum.2015.04.007.
- [13] Walter Zulehner. The Ciarlet-Raviart method for biharmonic problems on general polygonal domains: mapping properties and preconditioning. *SIAM J. Numer. Anal.*, 53(2):984–1004, 2015. doi:10.1137/130941225.
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Articles in Proceedings:

- [1] Katharina Rafetseder and Walter Zulehner. On a new mixed formulation of Kirchhoff plates on curvilinear polygonal domains. In *Numerical mathematics and advanced applications—ENUMATH 2017*, volume 126 of *Lect. Notes Comput. Sci. Eng.*, pages 869–877. Springer, Cham, 2019. doi:10.1007/978-3-319-96415-7_82.

- [2] Clemens Hofreither and Walter Zulehner. On full multigrid for isogeometric analysis. In *Domain decomposition methods in science and engineering XXII*, volume 104 of *Lect. Notes Comput. Sci. Eng.*, pages 267–274. Springer, Cham, 2016. doi:10.1007/978-3-319-18827-0_25.
- [3] Clemens Hofreither and Walter Zulehner. Mass smoothers in geometric multigrid for isogeometric analysis. In *Curves and surfaces*, volume 9213 of *Lecture Notes in Comput. Sci.*, pages 272–279. Springer, Cham, 2015. doi:10.1007/978-3-319-22804-4_20.
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- [5] Clemens Hofreither and Walter Zulehner. Spectral analysis of geometric multigrid methods for isogeometric analysis. In *Numerical methods and applications*, volume 8962 of *Lecture Notes in Comput. Sci.*, pages 123–129. Springer, Cham, 2015. doi:10.1007/978-3-319-15585-2_14.
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- [10] Huidong Yang and Walter Zulehner. Numerical simulation of fluid-structure interaction problems on hybrid meshes with algebraic multigrid methods. In Ivan Lirkov,

- Svetozar Margenov, and Jerzy Waśniewski, editors, *Large-Scale Scientific Computing*, volume 5910 of *Lecture Notes in Computer Science*, pages 116–123. Berlin: Springer, 2010. doi:10.1007/978-3-642-12535-5_12.
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- [18] Alfred Preuer, Günther Kolb, and Walter Zulehner. Computational fluid dynamics in modelling blast furnace erosion. In Heinz W. Engl and Joyce McLaughlin, editors, *Proceedings of the Conference Inverse Problems and Optimal Design in*

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- [21] Helmut Gfrerer, Hansjörg Wacker, Walter Zulehner, and Jürgen Guddat. Path-following methods for Kuhn-Tucker curves by an active index set strategy. In A. Bagchi and H. Th. Jongen, editors, *Systems and optimization (Enschede, 1984)*, volume 66 of *Lecture Notes in Control and Inform. Sci.*, pages 111–131. Springer, Berlin, 1985. doi:10.1007/BFb0043395.
- [22] Helmut Gfrerer, Jürgen Guddat, Hansjörg Wacker, and Walter Zulehner. Globalization of locally convergent algorithms for nonlinear optimization problems with constraints. In Antony V. Fiacco and Kenneth O. Kortanek, editors, *Semi-Infinite Programming and Applications*, volume 215 of *Lecture Notes in Econom. and Math. Systems*, pages 128–137. Springer, Berlin-New York, 1983. doi:10.1007/978-3-642-46477-5_9.
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Articles in Edited Books:

- [1] Walter Zulehner. Efficient solvers for saddle point problems with applications to PDE-constrained optimization. In Thomas Apel and Olaf Steinbach, editors, *Advanced Finite Element Methods and Applications*, volume 66 of *Lecture Notes in Applied and Computational Mechanics*, pages 197–216. Springer Berlin Heidelberg, 2013. doi:10.1007/978-3-642-30316-6_9.

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- [3] Walter Zulehner. On the design of the volute of a centrifugal pump. In *Case Studies in Industrial Mathematics*, volume 2 of *European Consort. Math. Indust.*, pages 117–130. Teubner, Stuttgart, 1988. doi:10.1007/978-3-663-12063-6_5.
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Books, Editor of Books:

- [1] Ulrich Langer, Wolfgang Amrhein, and Walter Zulehner, editors. *Scientific computing in electrical engineering. SCEE 2016, St. Wolfgang, Austria, October 3–7, 2016. Proceedings of the 11th international conference*, volume 28. Cham: Springer, 2018. doi:10.1007/978-3-319-75538-0.
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- [6] Heinz W. Engl, Hansjörg Wacker, and Walter Zulehner, editors. *Case studies in industrial mathematics*, volume 2 of *European Consortium for Mathematics in Industry*. B. G. Teubner, Stuttgart; Kluwer Academic Publishers, Dordrecht, 1988. doi:10.1007/978-3-663-12063-6.

Other Publications:

- [1] Walter Zulehner. Uzawa-type methods for block-structured indefinite linear systems. SFB-Report 2005-5, SFB F013, Johannes Kepler University Linz, Austria, 2005.
- [2] Walter Zulehner. *Schrittweitensteuerungen für Einbettungsmethoden*. PhD thesis, Johannes Kepler Universität Linz, 1981.
- [3] Walter Zulehner. Über die Berechnung der hydrodynamischen Koeffizienten für den rotationssymmetrischen Fall. Master's thesis, Johannes Kepler Universität Linz, 1978.