A Complete Bibliography of Publications in *Numerische Mathematik* (2020–2029)

Nelson H. F. Beebe
University of Utah
Department of Mathematics, 110 LCB
155 S 1400 E RM 233
Salt Lake City, UT 84112-0090
USA

Tel: +1 801 581 5254

E-mail: beebe@math.utah.edu, beebe@acm.org,
beebe@computer.org (Internet)
WWW URL: https://www.math.utah.edu/~beebe/

22 September 2025
Version 1.52

Title word cross-reference

1 [LW21]. 2 [BD21]. ^{k} [LLMP24]. α [BS24]. B [DP20]. C^0 [BySTZ21, LZ20]. C^1 [Zha25]. E [Kri20]. ℓ^1 [MH21]. h [LSW22, MCT20]. $H(\mathrm{div})$ [QZ24]. $H(\mathrm{curl})$ [CW20]. $H(\mathrm{div})$ [CW20]. H^1 [CW20, FS20]. H^2 [AP21]. J [AHP21]. L^2 [HKP20]. L^∞ [PR23]. $\mathbf{R}^N$ [CIR24]. $\mathbf{Q}$ [BNW20]. $\mathcal{H}$ [FMP22]. $\mathcal{H}^2$ [BBF22]. Ω [NP21b]. p [CFEV21, DFTW20, DHW23, Loi20, Zen23]. $p(\cdot,\cdot)$ [BK25]. P_4 [Zha25]. P_k [Zha25]. Q^2 [LZ20]. QR [BDG20]. s [CIV21]. T [Hal21]. $\boldsymbol{H}(\mathrm{curl})$ [CFV24].

-bases [DP20]. **-coercivity** [Hal21]. **-compatibility** [Hal21]. **-conforming** [QZ24]. **-FEM** [LSW22]. **-Laplace** [DHW23]. **-Laplacian** [Loi20]. **-matrix** [BBF22, FMP22]. **-method** [AHP21]. **-Mosolov** [BS24]. **-Navier** [BK25]. **-Poisson** [DFTW20]. **-quasi-norm** [Zen23]. **-regularization** [MH21]. **-robust** [CFEV21]. **-schemes** [Kri20]. **-stable** [NP21b]. **-tensor** [BNW20]. **-term** [CIV21]. **-version** [MCT20].

[EF21, HK22b, Lei22]. **waveguide** [KZ25]. **waveguides** [Zha21]. **wavelet** [HvR24, LPU23]. **Waves** [IGS21]. **Weak** [BLL25, CJL24, Hal21, KS20, KN21, MP21, ON22]. **weakly** [KLMNS22]. **weighted** [KPW20, Le 23, OS22]. **Which** [DV24]. **Whittle** [CK20]. **Willmore** [HL22, KLL21]. **windowed** [LLW24]. **wired** [GBS24]. **without** [HJP20, SNO20]. **work** [MV20].

Zhang [Uhl24]. **zone** [CEG+20].

References

Alouges:2021:NPL

[AA21] François Alouges and Martin Averseng. New preconditioners for the Laplace and Helmholtz integral equations on open curves: analytical framework and numerical results. *Numerische Mathematik*, 148(2):255–292, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01189-5; https://link.springer.com/content/pdf/10.1007/s00211-021-01189-5.pdf`.

Alves:2024:WSP

[AA24] Carlos J. S. Alves and Pedro R. S. Antunes. Wave scattering problems in exterior domains with the method of fundamental solutions. *Numerische Mathematik*, 156(2):375–394, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01395-x`.

Alfonsi:2021:GCH

[AB21] Aurélien Alfonsi and Vlad Bally. A generic construction for high order approximation schemes of semigroups using random grids. *Numerische Mathematik*, 148(4):743–793, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01219-2`.

Ammari:2021:DLI

[ABMS21] Habib Ammari, Elie Bretin, Pierre Millien, and Laurent Seppecher. A direct linear inversion for discontinuous elastic parameters recovery from internal displacement information only. *Numerische Mathematik*, 147(1):189–226, January 2021.

CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-020-01164-6.

Antonopoulou:2021:NAS

[ABNP21] Dimitra Antonopoulou, Lubomír Banas, Robert Nürnberg, and Andreas Prohl. Numerical approximation of the stochastic Cahn–Hilliard equation near the sharp interface limit. *Numerische Mathematik*, 147(3):505–551, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01179-7; https://link.springer.com/content/pdf/10.1007/s00211-021-01179-7.pdf.

Aimi:2023:HOT

[ADGS23] Alessandra Aimi, Giulia Di Credico, Heiko Gimperlein, and Ernst P. Stephan. Higher-order time domain boundary elements for elastodynamics: graded meshes and *hp* versions. *Numerische Mathematik*, 154(1–2):35–101, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01355-x.

Altmann:2021:MGP

[AHP21] Robert Altmann, Patrick Henning, and Daniel Peterseim. The J-method for the Gross–Pitaevskii eigenvalue problem. *Numerische Mathematik*, 148(3):575–610, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01216-5; https://link.springer.com/content/pdf/10.1007/s00211-021-01216-5.pdf.

Aggarwal:2024:AFV

[AHV24] Aekta Aggarwal, Helge Holden, and Ganesh Vaidya. On the accuracy of the finite volume approximations to nonlocal conservation laws. *Numerische Mathematik*, 156(1):237–271, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01388-2.

Aylwin:2021:EQR

[AJH21] Rubén Aylwin and Carlos Jerez-Hanckes. The effect of quadrature rules on finite element solutions of Maxwell variational problems. *Numerische Mathematik*, 147(4):903–936, April 2021.

CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01186-8`.

Axelsson:2020:SPP

[AK20] Owe Axelsson and János Karátson. Superior properties of the PRESB preconditioner for operators on two-by-two block form with square blocks. *Numerische Mathematik*, 146(2):335–368, October 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01143-x; https://link.springer.com/content/pdf/10.1007/s00211-020-01143-x.pdf`.

Axelsson:2021:KIU

[AK21] Owe Axelsson and János Karátson. Krylov improvements of the Uzawa method for Stokes type operator matrices. *Numerische Mathematik*, 148(3):611–631, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01208-5; https://link.springer.com/content/pdf/10.1007/s00211-021-01208-5.pdf`.

Allen:2022:BCP

[AK22] Larry Allen and Robert C. Kirby. Bounds-constrained polynomial approximation using the Bernstein basis. *Numerische Mathematik*, 152(1):101–126, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01311-1`.

Armentano:2020:SEP

[AL20] María G. Armentano and Ariel L. Lombardi. The Steklov eigenvalue problem in a cuspidal domain. *Numerische Mathematik*, 144(2):237–270, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01092-0`.

Antonietti:2023:LST

[ALP23] Paola F. Antonietti, Lorenzo Liverani, and Vittorino Pata. Lack of superstable trajectories in linear viscoelasticity: a numerical approach. *Numerische Mathematik*, 153(4):611–633, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01351-1`.

Akrivis:2022:PEE

[AM22] Georgios Akrivis and Charalambos G. Makridakis. A posteriori error estimates for Radau IIA methods via maximal parabolic regularity. *Numerische Mathematik*, 150(3):691–717, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01271-6`.

Alber:2025:MMS

[AMS25] Christian Alber, Chupeng Ma, and Robert Scheichl. A mixed multiscale spectral generalized finite element method. *Numerische Mathematik*, 157(1):1–40, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01446-3`.

Anton:2025:FER

[AMV25] Ramona Anton, Nicolae Mihalache, and François Vigneron. Fast evaluation of real and complex polynomials. *Numerische Mathematik*, 157(1):355–408, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01454-x`.

Anh:2020:DGA

[AN20] Cung The Anh and Tran Minh Nguyet. Discontinuous Galerkin approximations for an optimal control problem of three-dimensional Navier–Stokes–Voigt equations. *Numerische Mathematik*, 145(4):727–769, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01132-0`.

Anonymous:2025:JNa

[Ano25a] Anonymous. Journal navigation. *Numerische Mathematik*, 157 (1):??, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Anonymous:2025:JNb

[Ano25b] Anonymous. Journal navigation. *Numerische Mathematik*, 157 (2):??, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Anonymous:2025:JNc

[Ano25c] Anonymous. Journal navigation. *Numerische Mathematik*, 157 (3):1133–1159, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Anonymous:2025:JNd

[Ano25d] Anonymous. Journal navigation. *Numerische Mathematik*, 157 (4), August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

Ainsworth:2021:PHO

[AP21] Mark Ainsworth and Charles Parker. Preconditioning high order H^2 conforming finite elements on triangles. *Numerische Mathematik*, 148(2):223–254, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01206-7`.

Alahmadi:2022:RGQ

[APR22] J. Alahmadi, M. Pranić, and L. Reichel. Rational Gauss quadrature rules for the approximation of matrix functionals involving Stieltjes functions. *Numerische Mathematik*, 151(2):443–473, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01293-0`.

Arbogast:2022:DSM

[ATW22] Todd Arbogast, Zhen Tao, and Chuning Wang. Direct serendipity and mixed finite elements on convex quadrilaterals. *Numerische Mathematik*, 150(4):929–974, April 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01274-3`.

Ben-Artzi:2022:UAC

[BAMR22] Jonathan Ben-Artzi, Marco Marletta, and Frank Rösler. Universal algorithms for computing spectra of periodic operators. *Numerische Mathematik*, 150(3):719–767, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-021-01265-w`.

Beik:2022:PTC

[BB22] Fatemeh Panjeh Ali Beik and Michele Benzi. Preconditioning techniques for the coupled Stokes–Darcy problem: spec-

tral and field-of-values analysis. *Numerische Mathematik*, 150(2):257–298, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01267-8; https://link.springer.com/content/pdf/10.1007/s00211-021-01267-8.pdf`.

Bellet:2023:ICS

[BBC23] Jean-Baptiste Bellet, Matthieu Brachet, and Jean-Pierre Croisille. Interpolation on the cubed sphere with spherical harmonics. *Numerische Mathematik*, 153(2–3):249–278, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01340-w`.

Bauer:2022:KIA

[BBF22] M. Bauer, M. Bebendorf, and B. Feist. Kernel-independent adaptive construction of $\mathcal{H}^2$-matrix approximations. *Numerische Mathematik*, 150(1):1–32, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01255-y; https://link.springer.com/content/pdf/10.1007/s00211-021-01255-y.pdf`.

Bartsch:2021:NIB

[BBFR21] Jan Bartsch, Alfio Borzì, Francesco Fanelli, and Souvik Roy. A numerical investigation of Brockett's ensemble optimal control problems. *Numerische Mathematik*, 149(1):1–42, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01223-6; https://link.springer.com/content/pdf/10.1007/s00211-021-01223-6.pdf`.

Bonizzoni:2020:SPD

[BBJP20] Francesca Bonizzoni, Marcel Braukhoff, Ansgar Jüngel, and Ilaria Perugia. A structure-preserving discontinuous Galerkin scheme for the Fisher–KPP equation. *Numerische Mathematik*, 146(1):119–157, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01136-w; https://link.springer.com/content/pdf/10.1007/s00211-020-01136-w.pdf`.

Baird:2021:SOS

[BBMRB21] Graham Baird, Raimund Bürger, Paul E. Méndez, and Ricardo Ruiz-Baier. Second-order schemes for axisymmetric Navier–Stokes-Brinkman and transport equations modelling water filters. *Numerische Mathematik*, 147(2):431–479, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01169-1`.

Barbarino:2024:SVA

[BC24] Giovanni Barbarino and Antonio Cicone. Stabilization and variations to the adaptive local iterative filtering algorithm: the fast resampled iterative filtering method. *Numerische Mathematik*, 156 (2):395–433, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01394-y`.

Blanc:2020:VPA

[BCD20] X. Blanc, E. Cancès, and M.-S. Dupuy. Variational projector augmented-wave method: theoretical analysis and preliminary numerical results. *Numerische Mathematik*, 144(2):271–321, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01082-2`.

Bouchut:2020:EST

[BCG20] François Bouchut, Christophe Chalons, and Sébastien Guisset. An entropy satisfying two-speed relaxation system for the barotropic Euler equations: application to the numerical approximation of low Mach number flows. *Numerische Mathematik*, 145(1):35–76, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01111-5`.

Bertrand:2023:SFH

[BCGT23] Fleurianne Bertrand, Carsten Carstensen, Benedikt Gräßle, and Ngoc Tien Tran. Stabilization-free HHO a posteriori error control. *Numerische Mathematik*, 154(3–4):369–408, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01366-8`.

Bredies:2025:SOA

[BCH+25] Kristian Bredies, Marcello Carioni, Martin Holler, Yury Korolev, and Carola-Bibiane Schönlieb. A sparse optimization approach to infinite infimal convolution regularization. *Numerische Mathematik*, 157(1):41–96, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01439-2`.

Bustinza:2025:HHO

[BCL25] Rommel Bustinza, Matteo Cicuttin, and Ariel L. Lombardi. A hybrid high-order method for the mixed Steklov eigenvalue problem. *Numerische Mathematik*, 157(2):447–475, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01463-w`.

Bokoch:2024:CFN

[BCLD24] Sergiy M. Bokoch, Gilles Carbou, Stéphane Labbé, and Stéphane Despréaux. Circuits of ferromagnetic nanowires. *Numerische Mathematik*, 156(4):1511–1540, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01426-7`.

Breit:2021:CRN

[BD21] Dominic Breit and Alan Dodgson. Convergence rates for the numerical approximation of the 2D stochastic Navier–Stokes equations. *Numerische Mathematik*, 147(3):553–578, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01181-z; https://link.springer.com/content/pdf/10.1007/s00211-021-01181-z.pdf`.

Burman:2025:UCP

[BDE25] Erik Burman, Guillaume Delay, and Alexandre Ern. The unique continuation problem for the wave equation discretized with a high-order space-time nonconforming method. *Numerische Mathematik*, 157(4):1259–1284, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01479-2`.

Bevilacqua:2020:FIU

[BDG20] Roberto Bevilacqua, Gianna M. Del Corso, and Luca Gemignani. Fast QR iterations for unitary plus low rank matrices. *Numerische Mathematik*, 144(1):23–53, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01080-4`.

Burman:2022:FDL

[BDG22] Erik Burman, Rebecca Durst, and Johnny Guzmán. Fully discrete loosely coupled Robin–Robin scheme for incompressible fluid-structure interaction: stability and error analysis. *Numerische Mathematik*, 151(4):807–840, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01295-y`.

Buffa:2020:MAR

[BDK+20] Annalisa Buffa, Jürgen Dölz, Stefan Kurz, Sebastian Schöps, Rafael Vázquez, and Felix Wolf. Multipatch approximation of the de Rham sequence and its traces in isogeometric analysis. *Numerische Mathematik*, 144(1):201–236, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01079-x`.

Braida:2022:STO

[BDP22] B. Braida, J. Dalphin, and Y. Privat. Shape and topology optimization for maximum probability domains in quantum chemistry. *Numerische Mathematik*, 151(4):1017–1064, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01305-z`.

Bianchi:2025:CAP

[BDR25] Davide Bianchi, Marco Donatelli, and Lothar Reichel. Convergence analysis and parameter estimation for the iterated Arnoldi–Tikhonov method. *Numerische Mathematik*, 157(3):??, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01472-9`.

Balci:2024:NAV

[BDS24] Anna Kh. Balci, Lars Diening, and Abner J. Salgado. Numerical approximation of variational problems with orthotropic growth.

Numerische Mathematik, 156(5):1751–1779, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01432-9`.

BeiraodaVeiga:2025:PCR

[BDV25] L. Beirão da Veiga, F. Dassi, and G. Vacca. Pressure and convection robust finite elements for magnetohydrodynamics. *Numerische Mathematik*, 157(4):1161–1209, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01476-5`.

Berman:2020:SAP

[Ber20] Robert J. Berman. The Sinkhorn algorithm, parabolic optimal transport and geometric Monge–Ampère equations. *Numerische Mathematik*, 145(4):771–836, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01127-x; https://link.springer.com/content/pdf/10.1007/s00211-020-01127-x.pdf`.

Bermejo:2021:NAF

[Ber21] R. Bermejo. Numerical analysis of a finite element formulation of the P2D model for lithium-ion cells. *Numerische Mathematik*, 149(3):463–505, November 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01235-2; https://link.springer.com/content/pdf/10.1007/s00211-021-01235-2.pdf`.

Bachmayr:2025:DLR

[BEU25] Markus Bachmayr, Henrik Eisenmann, and André Uschmajew. Dynamical low-rank tensor approximations to high-dimensional parabolic problems: existence and convergence of spatial discretizations. *Numerische Mathematik*, 157(3):749–779, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01465-8`.

Banjai:2024:RKC

[BF24] Lehel Banjai and Matteo Ferrari. Runge–Kutta convolution quadrature based on Gauss methods. *Numerische Mathematik*, 156(5):1719–1750, October 2024. CODEN NUMMA7. ISSN

0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01429-4.

Burman:2022:ETS

[BFM22] Erik Burman, Stefan Frei, and Andre Massing. Eulerian time-stepping schemes for the non-stationary Stokes equations on time-dependent domains. *Numerische Mathematik*, 150(2):423–478, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01264-x; https://link.springer.com/content/pdf/10.1007/s00211-021-01264-x.pdf.

Becker:2023:GOA

[BGIP23] Roland Becker, Gregor Gantner, Michael Innerberger, and Dirk Praetorius. Goal-oriented adaptive finite element methods with optimal computational complexity. *Numerische Mathematik*, 153 (1):111–140, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01334-8.

Bartel:2023:OSB

[BGJR23] Andreas Bartel, Michael Günther, Birgit Jacob, and Timo Reis. Operator splitting based dynamic iteration for linear differential-algebraic port-Hamiltonian systems. *Numerische Mathematik*, 155(1–2):1–34, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01369-5.

Bai:2025:CMP

[BGL25] Genming Bai, Xinping Gui, and Buyang Li. Convergence of multi-step projection methods for harmonic map heat flows into general surfaces. *Numerische Mathematik*, 157(2):629–661, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01464-9.

Bellotti:2022:FDF

[BGM22a] Thomas Bellotti, Benjamin Graille, and Marc Massot. Finite difference formulation of any lattice Boltzmann scheme. *Numerische Mathematik*, 152(1):1–40, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01302-2.

Bessaih:2022:CDA

[BGM22b] H. Bessaih, V. Ginting, and B. McCaskill. Continuous data assimilation for displacement in a porous medium. *Numerische Mathematik*, 151(4):927–962, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01306-y`.

Bonito:2024:FEM

[BGM24] Andrea Bonito, Diane Guignard, and Angelique Morvant. Finite element methods for the stretching and bending of thin structures with folding. *Numerische Mathematik*, 156(6):2031–2068, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01442-7`.

Benner:2023:UFT

[BGW23] Peter Benner, Serkan Gugercin, and Steffen W. R. Werner. A unifying framework for tangential interpolation of structured bilinear control systems. *Numerische Mathematik*, 155(3–4):445–483, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01380-w`.

Burman:2020:CFE

[BHL20] Erik Burman, Peter Hansbo, and Mats G. Larson. A cut finite element method for a model of pressure in fractured media. *Numerische Mathematik*, 146(4):783–818, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01157-5; https://link.springer.com/content/pdf/10.1007/s00211-020-01157-5.pdf`.

Burman:2022:CBE

[BHL22] Erik Burman, Peter Hansbo, and Mats G. Larson. CutFEM based on extended finite element spaces. *Numerische Mathematik*, 152 (2):331–369, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01313-z`.

Barrenechea:2020:MHM

[BJPV20] Gabriel R. Barrenechea, Fabrice Jaillet, Diego Paredes, and Frédéric Valentin. The multiscale hybrid mixed method in general polygonal meshes. *Numerische Mathematik*, 145(1):197–237,

May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01103-5.

Bartels:2022:EET

[BK22a] Sören Bartels and Alex Kaltenbach. Error estimates for total-variation regularized minimization problems with singular dual solutions. *Numerische Mathematik*, 152(4):881–906, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01324-w.

Beschle:2022:SEE

[BK22b] Cedric Aaron Beschle and Balázs Kovács. Stability and error estimates for non-linear Cahn–Hilliard-type equations on evolving surfaces. *Numerische Mathematik*, 151(1):1–48, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01280-5.

Berselli:2025:CAF

[BK25] Luigi C. Berselli and Alex Kaltenbach. Convergence analysis for a fully-discrete finite element approximation of the unsteady $p(\cdot,\cdot)$-Navier–Stokes equations. *Numerische Mathematik*, 157(2):573–627, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01450-1.

Bunder:2021:EFP

[BKR21] J. E. Bunder, I. G. Kevrekidis, and A. J. Roberts. Equation-free patch scheme for efficient computational homogenisation via self-adjoint coupling. *Numerische Mathematik*, 149(2):229–272, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01232-5.

Bergold:2022:EBT

[BL22] Paul Bergold and Caroline Lasser. An error bound for the time-sliced thawed Gaussian propagation method. *Numerische Mathematik*, 152(3):511–551, November 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01319-7.

Bao:2024:SPP

[BL24] Weizhu Bao and Yifei Li. A structure-preserving parametric finite element method for geometric flows with anisotropic surface energy. *Numerische Mathematik*, 156(2):609–639, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01398-8`.

Bai:2025:WMP

[BLL25] Genming Bai, Dmitriy Leykekhman, and Buyang Li. Weak maximum principle of finite element methods for parabolic equations in polygonal domains. *Numerische Mathematik*, 157(1): 97–142, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01453-y`.

Bignardi:2025:STC

[BM25] Paolo Bignardi and Andrea Moiola. A space-time continuous and coercive formulation for the wave equation. *Numerische Mathematik*, 157(4):1211–1258, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01478-3`.

Banjai:2023:ECH

[BMS23a] Lehel Banjai, Jens M. Melenk, and Christoph Schwab. Exponential convergence of hp FEM for spectral fractional diffusion in polygons. *Numerische Mathematik*, 153(1):1–47, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01329-5`.

Bonafini:2023:AAD

[BMS23b] Mauro Bonafini, Ismael Medina, and Bernhard Schmitzer. Asymptotic analysis of domain decomposition for optimal transport. *Numerische Mathematik*, 153(2–3):451–492, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01347-x`.

Burman:2020:SFE

[BNO20] Erik Burman, Mihai Nechita, and Lauri Oksanen. A stabilized finite element method for inverse problems subject to the

convection-diffusion equation. I: Diffusion-dominated regime. *Numerische Mathematik*, 144(3):451–477, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01087-x; https://link.springer.com/content/pdf/10.1007/s00211-019-01087-x.pdf`.

Burman:2022:SFE

[BNO22] Erik Burman, Mihai Nechita, and Lauri Oksanen. A stabilized finite element method for inverse problems subject to the convection–diffusion equation. II: convection-dominated regime. *Numerische Mathematik*, 150(3):769–801, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01268-1`.

Borthagaray:2020:SPF

[BNW20] Juan Pablo Borthagaray, Ricardo H. Nochetto, and Shawn W. Walker. A structure-preserving FEM for the uniaxially constrained **Q**-tensor model of nematic liquid crystals. *Numerische Mathematik*, 145(4):837–881, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01133-z`.

Balci:2022:CRF

[BOS22] Anna Kh. Balci, Christoph Ortner, and Johannes Storn. Crouzeix–Raviart finite element method for non-autonomous variational problems with Lavrentiev gap. *Numerische Mathematik*, 151(4):779–805, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01303-1`.

Bertoluzza:2024:IEV

[BPP24] Silvia Bertoluzza, Micol Pennacchio, and Daniele Prada. Interior estimates for the virtual element method. *Numerische Mathematik*, 156(3):1163–1196, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01408-9`.

Bokanowski:2021:SCS

[BPR21] Olivier Bokanowski, Athena Picarelli, and Christoph Reisinger. Stability and convergence of second order backward differentiation schemes for parabolic Hamilton–Jacobi–Bellman equations.

Numerische Mathematik, 148(1):187–222, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01202-x; https://link.springer.com/content/pdf/10.1007/s00211-021-01202-x.pdf`.

Brunner:2025:COA

[BPS25] Maximilian Brunner, Dirk Praetorius, and Julian Streitberger. Cost-optimal adaptive FEM with linearization and algebraic solver for semilinear elliptic PDEs. *Numerische Mathematik*, 157 (2):409–445, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01455-w`.

Bartels:2020:NSB

[BR20] Sören Bartels and Philipp Reiter. Numerical solution of a bending-torsion model for elastic rods. *Numerische Mathematik*, 146(4):661–697, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01156-6; https://link.springer.com/content/pdf/10.1007/s00211-020-01156-6.pdf`.

Benzi:2023:CNE

[BRS23] Michele Benzi, Michele Rinelli, and Igor Simunec. Computation of the von Neumann entropy of large matrices via trace estimators and rational Krylov methods. *Numerische Mathematik*, 155(3–4): 377–414, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01368-6`.

Bonafini:2021:DDE

[BS21] Mauro Bonafini and Bernhard Schmitzer. Domain decomposition for entropy regularized optimal transport. *Numerische Mathematik*, 149(4):819–870, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01245-0; https://link.springer.com/content/pdf/10.1007/s00211-021-01245-0.pdf`.

Banz:2024:EHF

[BS24] Lothar Banz and Ernst P. Stephan. *hp-FEM* for the α-Mosolov problem: a priori and a posteriori error estimates. *Nu-*

merische Mathematik, 156(5):1679–1718, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01433-8`.

Biswas:2022:EED

[BTU22] A. Biswas, J. Tian, and S. Ulusoy. Error estimates for deep learning methods in fluid dynamics. *Numerische Mathematik*, 151 (3):753–777, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01294-z`.

Breiding:2022:SLR

[BV22] Paul Breiding and Nick Vannieuwenhoven. Sensitivity of low-rank matrix recovery. *Numerische Mathematik*, 152(4):725–759, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01327-7`.

Bartels:2021:ORC

[BW21] Sören Bartels and Zhangxian Wang. Orthogonality relations of Crouzeix–Raviart and Raviart–Thomas finite element spaces. *Numerische Mathematik*, 148(1):127–139, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01199-3; https://link.springer.com/content/pdf/10.1007/s00211-021-01199-3.pdf`.

Brenner:2021:CEC

[BySTZ21] Susanne C. Brenner, Li yeng Sung, Zhiyu Tan, and Hongchao Zhang. A convexity enforcing C^0 interior penalty method for the Monge–Ampère equation on convex polygonal domains. *Numerische Mathematik*, 148(3):497–524, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01210-x; https://link.springer.com/content/pdf/10.1007/s00211-021-01210-x.pdf`.

Cai:2025:HPE

[CC25] Difeng Cai and Zhiqiang Cai. Hybrid a posteriori error estimators for conforming finite element approximations to stationary convection-diffusion-reaction equations. *Numerische Mathematik*, 157(2):477–504, April 2025. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01462-x`.

Calzola:2023:SLS

[CCDS23] Elisa Calzola, Elisabetta Carlini, Xavier Dupuis, and Francisco J. Silva. A semi-Lagrangian scheme for Hamilton–Jacobi–Bellman equations with oblique derivatives boundary conditions. *Numerische Mathematik*, 153(1):49–84, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01336-6`.

Casas:2025:BCS

[CCM25] Eduardo Casas, Konstantinos Chrysafinos, and Mariano Mateos. Bilinear control of semilinear elliptic PDEs: convergence of a semismooth Newton method. *Numerische Mathematik*, 157(1): 143–163, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01448-1`.

Caetano:2024:HMB

[CCWG+24] A. M. Caetano, S. N. Chandler-Wilde, A. Gibbs, D. P. Hewett, and A. Moiola. A Hausdorff-measure boundary element method for acoustic scattering by fractal screens. *Numerische Mathematik*, 156(2):463–532, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01399-7`.

Cai:2020:REP

[CCZ20] Difeng Cai, Zhiqiang Cai, and Shun Zhang. Robust equilibrated a posteriori error estimator for higher order finite element approximations to diffusion problems. *Numerische Mathematik*, 144 (1):1–21, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01075-1`.

Church:2020:DMA

[CDE20] Lewis Church, Ana Djurdjevac, and Charles M. Elliott. A domain mapping approach for elliptic equations posed on random bulk and surface domains. *Numerische Mathematik*, 146(1):1–49, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01139-7;`

https://link.springer.com/content/pdf/10.1007/s00211-020-01139-7.pdf.

Cances:2020:NQB

[CEG+20] Éric Cancès, Virginie Ehrlacher, David Gontier, Antoine Levitt, and Damiano Lombardi. Numerical quadrature in the Brillouin zone for periodic Schrödinger operators. *Numerische Mathematik*, 144(3):479–526, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01096-w.

Carstensen:2021:GLB

[CEP21] Carsten Carstensen, Alexandre Ern, and Sophie Puttkammer. Guaranteed lower bounds on eigenvalues of elliptic operators with a hybrid high-order method. *Numerische Mathematik*, 149(2):273–304, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01228-1; https://link.springer.com/content/pdf/10.1007/s00211-021-01228-1.pdf.

Chaumont-Frelet:2024:EAH

[CFDI24] T. Chaumont-Frelet, V. Dolean, and M. Ingremeau. Efficient approximation of high-frequency Helmholtz solutions by Gaussian coherent states. *Numerische Mathematik*, 156(4):1385–1426, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01411-0.

Chaumont-Frelet:2021:DGR

[CFEV21] T. Chaumont-Frelet, A. Ern, and M. Vohralík. On the derivation of guaranteed and p-robust a posteriori error estimates for the Helmholtz equation. *Numerische Mathematik*, 148(3):525–573, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01192-w.

Carrillo:2020:CFV

[CFS20] José A. Carrillo, Francis Filbet, and Markus Schmidtchen. Convergence of a finite volume scheme for a system of interacting species with cross-diffusion. *Numerische Mathematik*, 145(3):473–511, July 2020. CODEN NUMMA7. ISSN

0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01121-3; https://link.springer.com/content/pdf/10.1007/s00211-020-01121-3.pdf.

Chaumont-Frelet:2024:SLC

[CFV24] Théophile Chaumont-Frelet and Martin Vohralík. A stable local commuting projector and optimal hp approximation estimates in $\boldsymbol{H}$(curl). *Numerische Mathematik*, 156(6):2293–2342, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01431-w.

Christiansen:2024:DEC

[CGGH24] Snorre H. Christiansen, Jay Gopalakrishnan, Johnny Guzmán, and Kaibo Hu. A discrete elasticity complex on three-dimensional Alfeld splits. *Numerische Mathematik*, 156(1):159–204, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01381-9.

Cances:2020:VFV

[CGT20] Clément Cancès, Thomas O. Gallouët, and Gabriele Todeschi. A variational finite volume scheme for Wasserstein gradient flows. *Numerische Mathematik*, 146(3):437–480, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01153-9.

Carstensen:2024:AHH

[CGT24] Carsten Carstensen, Benedikt Gräßle, and Ngoc Tien Tran. Adaptive hybrid high-order method for guaranteed lower eigenvalue bounds. *Numerische Mathematik*, 156(3):813–851, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01407-w.

Christof:2020:FEE

[CH20] Constantin Christof and Christof Haubner. Finite element error estimates in non-energy norms for the two-dimensional scalar Signorini problem. *Numerische Mathematik*, 145(3):513–551, July 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01117-z. See correction [CH21].

Christof:2021:CFE

[CH21] Constantin Christof and Christof Haubner. Correction to: Finite element error estimates in non-energy norms for the two-dimensional scalar Signorini problem. *Numerische Mathematik*, 148(2):495, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01204-9; https://link.springer.com/content/pdf/10.1007/s00211-021-01204-9.pdf`. See [CH20].

Chainais-Hillairet:2022:LTB

[CHHM22] Claire Chainais-Hillairet, Maxime Herda, and Julien Moatti. Long-time behaviour of hybrid finite volume schemes for advection–diffusion equations: linear and nonlinear approaches. *Numerische Mathematik*, 151(4):963–1016, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01289-w`.

Chkifa:2024:LEL

[Chk24] Moulay Abdellah Chkifa. Lattice enumeration via linear programming. *Numerische Mathematik*, 156(1):71–106, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01376-6`.

Chen:2021:DAN

[CHL21a] Meng Chen, Yunqing Huang, and Jichun Li. Development and analysis of a new finite element method for the Cohen–Monk PML model. *Numerische Mathematik*, 147(1):127–155, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01166-4`.

Chernov:2021:MEK

[CHL+21b] Alexey Chernov, Håkon Hoel, Kody J. H. Law, Fabio Nobile, and Raul Tempone. Multilevel ensemble Kalman filtering for spatio-temporal processes. *Numerische Mathematik*, 147(1):71–125, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01159-3; https://link.springer.com/content/pdf/10.1007/s00211-020-01159-3.pdf`.

Calvez:2023:CLV

[CHY23] Vincent Calvez, Hélène Hivert, and Havva Yoldas. Concentration in Lotka–Volterra parabolic equations: an asymptotic-preserving scheme. *Numerische Mathematik*, 154(1–2):103–153, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01362-y`.

Ciarlet:2022:AEF

[Cia22] Patrick Ciarlet, Jr. On the approximation of electromagnetic fields by edge finite elements — Part 4: analysis of the model with one sign-changing coefficient. *Numerische Mathematik*, 152 (2):223–257, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01315-x`.

Chiclana:2024:OBL

[CIR24] Rafael Chiclana, Mark A. Iwen, and Mark Philip Roach. On outer bi-Lipschitz extensions of linear Johnson–Lindenstrauss embeddings of subsets of $\mathbf{R}^N$. *Numerische Mathematik*, 156(6):2111–2130, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01437-4`.

Choi:2021:SHT

[CIV21] Bosu Choi, Mark Iwen, and Toni Volkmer. Sparse harmonic transforms II: best s-term approximation guarantees for bounded orthonormal product bases in sublinear-time. *Numerische Mathematik*, 148(2):293–362, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01200-z`.

Cox:2024:WCR

[CJL24] Sonja Cox, Arnulf Jentzen, and Felix Lindner. Weak convergence rates for temporal numerical approximations of the semilinear stochastic wave equation with multiplicative noise. *Numerische Mathematik*, 156(6):2131–2177, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01425-8`.

Chen:2021:CNS

[CJT21] Qingshan Chen, Lili Ju, and Roger Temam. Conservative numerical schemes with optimal dispersive wave relations: Part I. Derivation and analysis. *Numerische Mathematik*, 149(1): 43–85, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01218-3`.

Cox:2020:RCA

[CK20] Sonja G. Cox and Kristin Kirchner. Regularity and convergence analysis in Sobolev and Hölder spaces for generalized Whittle–Matérn fields. *Numerische Mathematik*, 146(4):819–873, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01151-x; https://link.springer.com/content/pdf/10.1007/s00211-020-01151-x.pdf`.

Carstensen:2022:PPE

[CKP22] Carsten Carstensen, Rekha Khot, and Amiya K. Pani. A priori and a posteriori error analysis of the lowest-order NCVEM for second-order linear indefinite elliptic problems. *Numerische Mathematik*, 151(3):551–600, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01296-x`.

Calder:2024:MDL

[CL24] Jeff Calder and Wonjun Lee. Monotone discretizations of level-set convex geometric PDEs. *Numerische Mathematik*, 156(6): 1987–2029, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01444-5`.

Craig:2022:PGA

[CLL+22] Katy Craig, Jian-Guo Liu, Jianfeng Lu, Jeremy L. Marzuola, and Li Wang. A proximal-gradient algorithm for crystal surface evolution. *Numerische Mathematik*, 152(3):631–662, November 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01320-0`.

Chen:2021:AHO

[CLX21] Zhiming Chen, Ke Li, and Xueshuang Xiang. An adaptive high-order unfitted finite element method for elliptic interface prob-

lems. *Numerische Mathematik*, 149(3):507–548, November 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01243-2`.

Caucao:2022:MSF

[CLY22] Sergio Caucao, Tongtong Li, and Ivan Yotov. A multipoint stress-flux mixed finite element method for the Stokes–Biot model. *Numerische Mathematik*, 152(2):411–473, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01310-2`.

Cardoen:2024:MAE

[CMNS24] Clément Cardoen, Swann Marx, Anthony Nouy, and Nicolas Seguin. A moment approach for entropy solutions of parameter-dependent hyperbolic conservation laws. *Numerische Mathematik*, 156(4):1289–1324, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01428-5`.

Casas:2021:NAC

[CMR21] Eduardo Casas, Mariano Mateos, and Arnd Rösch. Numerical approximation of control problems of non-monotone and non-coercive semilinear elliptic equations. *Numerische Mathematik*, 149(2):305–340, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01222-7; https://link.springer.com/content/pdf/10.1007/s00211-021-01222-7.pdf`.

Chen:2020:OEE

[CMS20] Hongtao Chen, Jingjing Mao, and Jie Shen. Optimal error estimates for the scalar auxiliary variable finite-element schemes for gradient flows. *Numerische Mathematik*, 145(1):167–196, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01112-4`.

Carstensen:2022:SMF

[CNP22] C. Carstensen, Neela Nataraj, and Amiya K. Pani. Stability of mixed FEMs for non-selfadjoint indefinite second-order linear elliptic PDEs. *Numerische Mathematik*, 150(4):975–992, April

2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01282-3.

Carstensen:2023:UPA

[CNRS23] Carsten Carstensen, Neela Nataraj, Gopikrishnan C. Remesan, and Devika Shylaja. Unified a priori analysis of four second-order FEM for fourth-order quadratic semilinear problems. *Numerische Mathematik*, 154(3–4):323–368, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01356-w.

Claeys:2022:RTC

[CP22] Xavier Claeys and Emile Parolin. Robust treatment of cross-points in optimized Schwarz methods. *Numerische Mathematik*, 151(2):405–442, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01288-x.

Chrysafinos:2023:AAO

[CP23] Konstantinos Chrysafinos and Dimitra Plaka. Analysis and approximations of an optimal control problem for the Allen–Cahn equation. *Numerische Mathematik*, 155(1–2):35–82, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01374-8.

Carstensen:2024:AGL

[CP24] Carsten Carstensen and Sophie Puttkammer. Adaptive guaranteed lower eigenvalue bounds with optimal convergence rates. *Numerische Mathematik*, 156(1):1–38, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01382-8.

Curry:2020:CLG

[CS20] Charles Curry and Alexander Schmeding. Convergence of Lie group integrators. *Numerische Mathematik*, 144(2):357–373, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01083-1.

Carstensen:2023:TDT

[CS23a] C. Carstensen and M. Schedensack. Two discretisations of the time-dependent Bingham problem. *Numerische Mathematik*, 153 (2–3):411–450, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01338-4`.

Cheng:2023:LDG

[CS23b] Yao Cheng and Martin Stynes. The local discontinuous Galerkin method for a singularly perturbed convection–diffusion problem with characteristic and exponential layers. *Numerische Mathematik*, 154(1–2):283–318, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01361-z`.

Chen:2024:ALM

[CSB24] Shukui Chen, Kirill Serkh, and James Bremer. On the adaptive Levin method. *Numerische Mathematik*, 156(6):1927–1985, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01443-6`.

Carstensen:2022:CAH

[CT22] Carsten Carstensen and Ngoc Tien Tran. Convergent adaptive hybrid higher-order schemes for convex minimization. *Numerische Mathematik*, 151(2):329–367, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01284-1`.

Chen:2020:CEP

[CW20] Wenbin Chen and Yanqiu Wang. H^1, $H(\mathrm{curl})$ and $H(\mathrm{div})$ conforming elements on polygon-based prisms and cones. *Numerische Mathematik*, 145(4):973–1004, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01129-9`.

Chandler-Wilde:2021:BEM

[CWHMB21] Simon N. Chandler-Wilde, David P. Hewett, Andrea Moiola, and Jeanne Besson. Boundary element methods for acoustic scattering by fractal screens. *Numerische Mathematik*, 147(4):785–837, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245

(electronic). URL http://link.springer.com/article/10.1007/s00211-021-01182-y; https://link.springer.com/content/pdf/10.1007/s00211-021-01182-y.pdf.

Chandler-Wilde:2023:SDL

[CWHPV23] Simon N. Chandler-Wilde, Raffael Hagger, Karl-Mikael Perfekt, and Jani A. Virtanen. On the spectrum of the double-layer operator on locally-dilation-invariant Lipschitz domains. *Numerische Mathematik*, 153(4):635–699, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01353-z.

Chandler-Wilde:2022:CEN

[CWS22] S. N. Chandler-Wilde and E. A. Spence. Coercivity, essential norms, and the Galerkin method for second-kind integral equations on polyhedral and Lipschitz domains. *Numerische Mathematik*, 150(2):299–371, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01256-x; https://link.springer.com/content/pdf/10.1007/s00211-021-01256-x.pdf. See correction [CWS23].

Chandler-Wilde:2023:CCE

[CWS23] S. N. Chandler-Wilde and E. A. Spence. Correction to: Coercivity, essential norms, and the Galerkin method for second-kind integral equations on polyhedral and Lipschitz domains. *Numerische Mathematik*, 154(1–2):319–321, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01357-9. See [CWS22].

Chandler-Wilde:2024:CSK

[CWS24] S. N. Chandler-Wilde and E. A. Spence. Coercive second-kind boundary integral equations for the Laplace Dirichlet problem on Lipschitz domains. *Numerische Mathematik*, 156(4):1325–1384, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01424-9.

Cicone:2021:NAI

[CZ21] Antonio Cicone and Haomin Zhou. Numerical analysis for iterative filtering with new efficient implementations based on

FFT. *Numerische Mathematik*, 147(1):1–28, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01165-5`.

Cances:2022:CFV

[CZ22] Clément Cancès and Antoine Zurek. A convergent finite volume scheme for dissipation driven models with volume filling constraint. *Numerische Mathematik*, 151(1):279–328, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01270-7`.

Cui:2022:SGF

[CZB22] Cu Cui, Qinghui Zhang, and Ivo Babuska. Stable generalized finite element method (SGFEM) for three-dimensional crack problems. *Numerische Mathematik*, 152(2):475–509, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01312-0`.

Alba:2020:SSK

[dAFR20] Patricia Díaz de Alba, Luisa Fermo, and Giuseppe Rodriguez. Solution of second kind Fredholm integral equations by means of Gauss and anti-Gauss quadrature rules. *Numerische Mathematik*, 146(4):699–728, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01163-7; https://link.springer.com/content/pdf/10.1007/s00211-020-01163-7.pdf`.

Dostal:2022:SSC

[DBR22] Zdenek Dostál, Tomás Brzobohatý, and Lubomír Říha. On the spectrum of Schur complements of 2D elastic clusters joined by rigid edge modes and hybrid domain decomposition. *Numerische Mathematik*, 152(1):41–66, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01307-x`.

Dolz:2021:MRA

[DES21] Jürgen Dölz, Herbert Egger, and Matthias Schlottbom. A model reduction approach for inverse problems with operator valued data. *Numerische Mathematik*, 148(4):889–917, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245

(electronic). URL http://link.springer.com/article/10.1007/s00211-021-01224-5; https://link.springer.com/content/pdf/10.1007/s00211-021-01224-5.pdf.

Diening:2020:RKI

[DFTW20] L. Diening, M. Fornasier, R. Tomasi, and M. Wank. A relaxed Kacanov iteration for the p-Poisson problem. *Numerische Mathematik*, 145(1):1–34, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01107-1; https://link.springer.com/content/pdf/10.1007/s00211-020-01107-1.pdf.

Dujardin:2020:CHE

[DHL20] Guillaume Dujardin, Frédéric Hérau, and Pauline Lafitte. Coercivity, hypocoercivity, exponential time decay and simulations for discrete Fokker–Planck equations. *Numerische Mathematik*, 144 (3):615–697, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01094-y.

Diening:2023:AST

[DHW23] Lars Diening, Martina Hofmanová, and Jörn Wichmann. An averaged space-time discretization of the stochastic p-Laplace system. *Numerische Mathematik*, 153(2–3):557–609, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01343-7.

Delaunay:2024:UBS

[DIM24] Tiphaine Delaunay, Sébastien Imperiale, and Philippe Moireau. Uniform boundary stabilization of a high-order finite element space discretization of the 1-d wave equation. *Numerische Mathematik*, 156(6):2069–2110, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01440-9.

Dong:2020:NPL

[DJC20] Bo Dong, Nan Jiang, and Moody T. Chu. Nonlinear power-like iteration by polar decomposition and its application to tensor approximation. *Numerische Mathematik*, 144(4):729–749, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01100-8.

Dai:2023:NST

[DL23] Zhen Dai and Lek-Heng Lim. Numerical stability and tensor nuclear norm. *Numerische Mathematik*, 155(3–4):345–376, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01377-5`.

Dapogny:2020:OSR

[DLO20] Charles Dapogny, Nicolas Lebbe, and Edouard Oudet. Optimization of the shape of regions supporting boundary conditions. *Numerische Mathematik*, 146(1):51–104, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01140-0`.

Dai:2024:CMI

[DLY24] Zhen Dai, Lek-Heng Lim, and Ke Ye. Complex matrix inversion via real matrix inversions. *Numerische Mathematik*, 156(6): 2179–2219, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01441-8`.

Deckelnick:2025:FES

[DN25] Klaus Deckelnick and Robert Nürnberg. Finite element schemes with tangential motion for fourth order geometric curve evolutions in arbitrary codimension. *Numerische Mathematik*, 157(4): 1313–1346, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01477-4`.

Despres:2021:CSO

[DNT21] B. Després, A. Nicolopoulos, and B. Thierry. Corners and stable optimized domain decomposition methods for the Helmholtz problem. *Numerische Mathematik*, 149(4):779–818, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01251-2`.

Delgado:2020:EOP

[DP20] Jorge Delgado and J. M. Peña. Extremal and optimal properties of B-bases collocation matrices. *Numerische Mathematik*, 146(1): 105–118, September 2020. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01135-x.

Duru:2020:SDG

[DRG+20] Kenneth Duru, Leonhard Rannabauer, Alice-Agnes Gabriel, Gunilla Kreiss, and Michael Bader. A stable discontinuous Galerkin method for the perfectly matched layer for elastodynamics in first order form. *Numerische Mathematik*, 146(4):729–782, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01160-w.

Dornisch:2021:IMM

[DS21] W. Dornisch and J. Stöckler. An isogeometric mortar method for the coupling of multiple NURBS domains with optimal convergence rates. *Numerische Mathematik*, 149(4):871–931, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01246-z; https://link.springer.com/content/pdf/10.1007/s00211-021-01246-z.pdf.

Danczul:2022:RBM

[DS22] Tobias Danczul and Joachim Schöberl. A reduced basis method for fractional diffusion operators I. *Numerische Mathematik*, 151 (2):369–404, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01287-y.

Diening:2022:FOT

[DST22] L. Diening, J. Storn, and T. Tscherpel. Fortin operator for the Taylor–Hood element. *Numerische Mathematik*, 150 (2):671–689, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01260-1; https://link.springer.com/content/pdf/10.1007/s00211-021-01260-1.pdf.

Dewaele:2024:WCN

[DV24] Nick Dewaele and Nick Vannieuwenhoven. Which constraints of a numerical problem cause ill-conditioning? *Numerische Mathematik*, 156(4):1427–1453, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01427-6.

Ecevit:2022:SGB

[EBL22] Fatih Ecevit, Yassine Boubendir, and Souaad Lazergui. Spectral Galerkin boundary element methods for high-frequency sound-hard scattering problems. *Numerische Mathematik*, 150(3): 803–847, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01269-0`.

Ellison:2021:PTA

[EF21] Abe C. Ellison and Bengt Fornberg. A parallel-in-time approach for wave-type PDEs. *Numerische Mathematik*, 148(1):79–98, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01197-5`.

Egger:2023:SAA

[EG23] H. Egger and J. Giesselmann. Stability and asymptotic analysis for instationary gas transport via relative energy estimates. *Numerische Mathematik*, 153(4):701–728, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01349-9`.

Elliott:2022:NAI

[EGK22] Charles M. Elliott, Harald Garcke, and Balázs Kovács. Numerical analysis for the interaction of mean curvature flow and diffusion on closed surfaces. *Numerische Mathematik*, 151(4):873–925, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01301-3`.

Eto:2024:SPF

[EGN24] Tokuhiro Eto, Harald Garcke, and Robert Nürnberg. A structure-preserving finite element method for the multi-phase Mullins–Sekerka problem with triple junctions. *Numerische Mathematik*, 156(4):1479–1509, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01414-x`.

Eigel:2020:ASG

[EMPS20] Martin Eigel, Manuel Marschall, Max Pfeffer, and Reinhold Schneider. Adaptive stochastic Galerkin FEM for lognormal coefficients in hierarchical tensor representations. *Nu-*

merische Mathematik, 145(3):655–692, July 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01123-1; https://link.springer.com/content/pdf/10.1007/s00211-020-01123-1.pdf.

Einkemmer:2022:PSS

[EOR22] L. Einkemmer, A. Ostermann, and M. Residori. A pseudo-spectral Strang splitting method for linear dispersive problems with transparent boundary conditions. *Numerische Mathematik*, 150(1):105–135, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01252-1; https://link.springer.com/content/pdf/10.1007/s00211-021-01252-1.pdf.

Egger:2020:MLM

[ER20] H. Egger and B. Radu. A mass-lumped mixed finite element method for acoustic wave propagation. *Numerische Mathematik*, 145(2):239–269, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01118-y.

Erbar:2020:COT

[ERSS20] Matthias Erbar, Martin Rumpf, Bernhard Schmitzer, and Stefan Simon. Computation of optimal transport on discrete metric measure spaces. *Numerische Mathematik*, 144(1):157–200, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01077-z.

Eisenmann:2024:ROS

[ES24] Monika Eisenmann and Tony Stillfjord. A randomized operator splitting scheme inspired by stochastic optimization methods. *Numerische Mathematik*, 156(2):435–461, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01396-w.

Elliott:2025:FDE

[ES25] Charles M. Elliott and Thomas Sales. A fully discrete evolving surface finite element method for the Cahn–Hilliard equation with a regular potential. *Numerische Mathematik*, 157(2):663–715,

April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01457-8.

Fuda:2022:NSL

[FCH22a] Chiara Fuda, Rosanna Campagna, and Kai Hormann. On the numerical stability of linear barycentric rational interpolation. *Numerische Mathematik*, 152(4):761–786, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01316-w. See publisher correction [FCH22b].

Fuda:2022:PCN

[FCH22b] Chiara Fuda, Rosanna Campagna, and Kai Hormann. Publisher correction to: On the numerical stability of linear barycentric rational interpolation. *Numerische Mathematik*, 152(4):787–788, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01330-y. See [FCH22a].

Freese:2024:SLG

[FHKP24] Philip Freese, Moritz Hauck, Tim Keil, and Daniel Peterseim. A super-localized generalized finite element method. *Numerische Mathematik*, 156(1):205–235, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01386-4.

Fuhrer:2022:DMS

[FHN22] Thomas Führer, Norbert Heuer, and Antti H. Niemi. A DPG method for shallow shells. *Numerische Mathematik*, 152(1):67–99, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01308-w.

Fuhrer:2020:UFR

[FHS20] Thomas Führer, Norbert Heuer, and Francisco-Javier Sayas. An ultraweak formulation of the Reissner–Mindlin plate bending model and DPG approximation. *Numerische Mathematik*, 145 (2):313–344, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01116-0.

Fuhrer:2023:LSF

[FK23] Thomas Führer and Michael Karkulik. Least-squares finite elements for distributed optimal control problems. *Numerische Mathematik*, 154(3–4):409–442, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01367-7`.

Feireisl:2020:FVS

[FLMM20] Eduard Feireisl, Mária Lukácová-Medvid'ová, and Hana Mizerová. A finite volume scheme for the Euler system inspired by the two velocities approach. *Numerische Mathematik*, 144(1): 89–132, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01078-y`.

Feireisl:2023:IEE

[FLMS23] Eduard Feireisl, Mária Lukácová-Medvid'ová, and Bangwei She. Improved error estimates for the finite volume and the MAC schemes for the compressible Navier–Stokes system. *Numerische Mathematik*, 153(2–3):493–529, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01346-y`.

Fang:2021:PSP

[FLNS21] Zhi-Wei Fang, Xue-Lei Lin, Michael K. Ng, and Hai-Wei Sun. Preconditioning for symmetric positive definite systems in balanced fractional diffusion equations. *Numerische Mathematik*, 147 (3):651–677, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01175-x`.

Faustmann:2022:CTE

[FMP22] Markus Faustmann, Jens Markus Melenk, and Maryam Parvizi. Caccioppoli-type estimates and $\mathcal{H}$-matrix approximations to inverses for FEM-BEM couplings. *Numerische Mathematik*, 150 (3):849–892, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-021-01261-0`.

Frittelli:2021:BSV

[FMS21] Massimo Frittelli, Anotida Madzvamuse, and Ivonne Sgura. Bulk-surface virtual element method for systems of PDEs in two-space

dimensions. *Numerische Mathematik*, 147(2):305–348, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01167-3; https://link.springer.com/content/pdf/10.1007/s00211-020-01167-3.pdf`.

Ferreira:2022:RTD

[FP22] Carla Ferreira and Beresford Parlett. A real triple dqds algorithm for the nonsymmetric tridiagonal eigenvalue problem. *Numerische Mathematik*, 150(2):373–422, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01254-z`.

Falcone:2020:CAF

[FPT20] Maurizio Falcone, Giulio Paolucci, and Silvia Tozza. Convergence of adaptive filtered schemes for first order evolutionary Hamilton–Jacobi equations. *Numerische Mathematik*, 145(2):271–311, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01119-x`.

Filbet:2021:CAA

[FRZ21] Francis Filbet, L. Miguel Rodrigues, and Hamed Zakerzadeh. Convergence analysis of asymptotic preserving schemes for strongly magnetized plasmas. *Numerische Mathematik*, 149(3):549–593, November 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01248-x`.

Feischl:2020:ECH

[FS20] M. Feischl and Ch. Schwab. Exponential convergence in H^1 of hp-FEM for Gevrey regularity with isotropic singularities. *Numerische Mathematik*, 144(2):323–346, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01085-z; https://link.springer.com/content/pdf/10.1007/s00211-019-01085-z.pdf`.

Feng:2024:IUE

[FS24] Yue Feng and Katharina Schratz. Improved uniform error bounds on a Lawson-type exponential integrator for the long-time dynamics of sine-Gordon equation. *Numerische Mathematik*, 156(4):1455–1477, August 2024. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01423-w.

Fuhrer:2020:FOL

[Füh20] Thomas Führer. First-order least-squares method for the obstacle problem. *Numerische Mathematik*, 144(1):55–88, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01084-0.

Funaro:2022:HWN

[Fun22] Daniele Funaro. How and why non smooth solutions of the 3D Navier–Stokes equations could possibly develop. *Numerische Mathematik*, 152(4):789–817, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01333-9.

Grassle:2024:PWS

[GBS24] Benedikt Gräßle, Nis-Erik Bohne, and Stefan Sauter. The pressure-wired Stokes element: a mesh-robust version of the Scott–Vogelius element. *Numerische Mathematik*, 156(5):1781–1807, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01430-x.

Gaudeul:2022:ECA

[GF22] Benoît Gaudeul and Jürgen Fuhrmann. Entropy and convergence analysis for two finite volume schemes for a Nernst–Planck–Poisson system with ion volume constraints. *Numerische Mathematik*, 151(1):99–149, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01279-y.

Gautam:2025:PIP

[GG25] Pankaj Gautam and Markus Grasmair. Parameter identification in PDEs by the solution of monotone inclusion problems. *Numerische Mathematik*, 157(3):781–822, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01473-8.

Gong:2022:CPO

[GGS22] Shihua Gong, Martin J. Gander, and Euan A. Spence. Convergence of parallel overlapping domain decomposition methods for the Helmholtz equation. *Numerische Mathematik*, 152(2): 259–306, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01318-8`.

Garde:2021:MRC

[GH21] Henrik Garde and Nuutti Hyvönen. Mimicking relative continuum measurements by electrode data in two-dimensional electrical impedance tomography. *Numerische Mathematik*, 147(3):579–609, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01170-8; https://link.springer.com/content/pdf/10.1007/s00211-020-01170-8.pdf`.

Ghoshal:2020:CGS

[GJT20] Shyam Sundar Ghoshal, Animesh Jana, and John D. Towers. Convergence of a Godunov scheme to an Audusse–Perthame adapted entropy solution for conservation laws with BV spatial flux. *Numerische Mathematik*, 146(3):629–659, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01150-y`.

Gedicke:2020:DCD

[GK20] Joscha Gedicke and Arbaz Khan. Divergence-conforming discontinuous Galerkin finite elements for Stokes eigenvalue problems. *Numerische Mathematik*, 144(3):585–614, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01095-x; https://link.springer.com/content/pdf/10.1007/s00211-019-01095-x.pdf`.

Guth:2024:PPC

[GKK+24] Philipp A. Guth, Vesa Kaarnioja, Frances Y. Kuo, Claudia Schillings, and Ian H. Sloan. Parabolic PDE-constrained optimal control under uncertainty with entropic risk measure using quasi-Monte Carlo integration. *Numerische Mathematik*, 156 (2):565–608, April 2024. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01397-9.

Giesselmann:2020:FCF

[GL20] Jan Giesselmann and Philippe G. LeFloch. Formulation and convergence of the finite volume method for conservation laws on spacetimes with boundary. *Numerische Mathematik*, 144(4): 751–785, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01101-7.

Gustafsson:2022:MFE

[GL22] Tom Gustafsson and Philip L. Lederer. Mixed finite elements for Bingham flow in a pipe. *Numerische Mathematik*, 152(4): 819–840, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01332-w.

Georgoulis:2021:PEB

[GLW21] Emmanuil H. Georgoulis, Omar Lakkis, and Thomas P. Wihler. A posteriori error bounds for fully-discrete hp-discontinuous Galerkin timestepping methods for parabolic problems. *Numerische Mathematik*, 148(2):363–386, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01187-7; https://link.springer.com/content/pdf/10.1007/s00211-021-01187-7.pdf.

Garcke:2021:NAB

[GN21] Harald Garcke and Robert Nürnberg. Numerical approximation of boundary value problems for curvature flow and elastic flow in Riemannian manifolds. *Numerische Mathematik*, 149(2):375–415, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01231-6; https://link.springer.com/content/pdf/10.1007/s00211-021-01231-6.pdf.

Gimperlein:2020:RPE

[GÖSS20] Heiko Gimperlein, Ceyhun Özdemir, David Stark, and Ernst P. Stephan. A residual a posteriori error estimate for the time-domain boundary element method. *Numerische Mathematik*, 146 (2):239–280, October 2020. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01142-y.

Gao:2023:NAM

[GQS23] Huadong Gao, Weifeng Qiu, and Weiwei Sun. New analysis of mixed FEMs for dynamical incompressible magnetohydrodynamics. *Numerische Mathematik*, 153(2–3):327–358, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01341-9.

Gantner:2024:IRS

[GS24] Gregor Gantner and Rob Stevenson. Improved rates for a space-time FOSLS of parabolic PDEs. *Numerische Mathematik*, 156 (1):133–157, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01387-3.

Grubisic:2023:SCM

[GSH23] Luka Grubišić, Mikael Saarikangas, and Harri Hakula. Stochastic collocation method for computing eigenspaces of parameter-dependent operators. *Numerische Mathematik*, 153(1):85–110, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01339-3.

Giga:2020:NNS

[GSTU20] Yoshikazu Giga, Koya Sakakibara, Kazutoshi Taguchi, and Masaaki Uesaka. A new numerical scheme for discrete constrained total variation flows and its convergence. *Numerische Mathematik*, 146(1):181–217, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01134-y; https://link.springer.com/content/pdf/10.1007/s00211-020-01134-y.pdf.

Gimperlein:2021:OOP

[GSUT21] Heiko Gimperlein, Jakub Stocek, and Carolina Urzúa-Torres. Optimal operator preconditioning for pseudodifferential boundary problems. *Numerische Mathematik*, 148(1):1–41, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01193-9.

Glowinski:2020:ANA

[GSY20] Roland Glowinski, Yongcun Song, and Xiaoming Yuan. An ADMM numerical approach to linear parabolic state constrained optimal control problems. *Numerische Mathematik*, 144(4): 931–966, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01104-4`.

Gallistl:2024:SGE

[GT24] Dietmar Gallistl and Ngoc Tien Tran. Stability and guaranteed error control of approximations to the Monge–Ampère equation. *Numerische Mathematik*, 156(1):107–131, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01385-5`.

Ghoshal:2022:GTS

[GTV22] Shyam Sundar Ghoshal, John D. Towers, and Ganesh Vaidya. A Godunov type scheme and error estimates for scalar conservation laws with Panov-type discontinuous flux. *Numerische Mathematik*, 151(3):601–625, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01297-w`.

Guo:2020:SCR

[Guo20] Hailong Guo. Surface Crouzeix–Raviart element for the Laplace–Beltrami equation. *Numerische Mathematik*, 144(3):527–551, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01099-7`.

Guth:2023:MQM

[GV23] Philipp A. Guth and Andreas Van Barel. Multilevel quasi-Monte Carlo for optimization under uncertainty. *Numerische Mathematik*, 154(3–4):443–484, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01364-w`.

Gao:2024:QIH

[GWSF24] Wenwu Gao, Jiecheng Wang, Zhengjie Sun, and Gregory E. Fasshauer. Quasi-interpolation for high-dimensional function approximation. *Numerische Mathematik*, 156(5):1855–1885, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-

3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01435-6.

Halla:2021:GAH

[Hal21] Martin Halla. Galerkin approximation of holomorphic eigenvalue problems: weak T-coercivity and T-compatibility. *Numerische Mathematik*, 148(2):387–407, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01205-8; https://link.springer.com/content/pdf/10.1007/s00211-021-01205-8.pdf.

Harrach:2021:USG

[Har21] Bastian Harrach. Uniqueness, stability and global convergence for a discrete inverse elliptic Robin transmission problem. *Numerische Mathematik*, 147(1):29–70, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-020-01162-8; https://link.springer.com/content/pdf/10.1007/s00211-020-01162-8.pdf.

Hu:2020:FDP

[HH20] Jingwei Hu and Xiaodong Huang. A fully discrete positivity-preserving and energy-dissipative finite difference scheme for Poisson–Nernst–Planck equations. *Numerische Mathematik*, 145 (1):77–115, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01109-z.

Hakula:2024:UQR

[HHK+24] Harri Hakula, Helmut Harbrecht, Vesa Kaarnioja, Frances Y. Kuo, and Ian H. Sloan. Uncertainty quantification for random domains using periodic random variables. *Numerische Mathematik*, 156(1):273–317, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01392-6.

Hong:2021:NDG

[HHMX21] Qingguo Hong, Jun Hu, Limin Ma, and Jinchao Xu. New discontinuous Galerkin algorithms and analysis for linear elasticity with symmetric stress tensor. *Numerische Mathematik*, 149(3): 645–678, November 2021. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01234-3`.

Hallman:2023:PAD

[HI23] Eric Hallman and Ilse C. F. Ipsen. Precision-aware deterministic and probabilistic error bounds for floating point summation. *Numerische Mathematik*, 155(1–2):83–119, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01370-y`.

Hopf:2025:CFV

[HJ25] Katharina Hopf and Ansgar Jüngel. Convergence of a finite-volume scheme and dissipative measure-valued-strong stability for a hyperbolic-parabolic cross-diffusion system. *Numerische Mathematik*, 157(3):897–949, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01474-7`.

Ha:2021:CEE

[HJK21] Seung-Yeal Ha, Shi Jin, and Doheon Kim. Convergence and error estimates for time-discrete consensus-based optimization algorithms. *Numerische Mathematik*, 147(2):255–282, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01174-y`.

Huang:2025:ESS

[HJLZ25] Jing Huang, Qinian Jin, Xiliang Lu, and Liuying Zhang. On early stopping of stochastic mirror descent method for ill-posed inverse problems. *Numerische Mathematik*, 157(2):539–571, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01458-7`.

Harrach:2020:BBV

[HJP20] Bastian Harrach, Tim Jahn, and Roland Potthast. Beyond the Bakushinkii veto: regularising linear inverse problems without knowing the noise distribution. *Numerische Mathematik*, 145(3):581–603, July 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01122-2; https://link.springer.com/content/pdf/10.1007/s00211-020-01122-2.pdf`.

Helin:2022:NAE

[HK22a] Tapio Helin and Remo Kretschmann. Non-asymptotic error estimates for the Laplace approximation in Bayesian inverse problems. *Numerische Mathematik*, 150(2):521–549, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01266-9; https://link.springer.com/content/pdf/10.1007/s00211-021-01266-9.pdf`.

Hochbruck:2022:EAF

[HK22b] Marlis Hochbruck and Jonas Köhler. Error analysis of a fully discrete discontinuous Galerkin alternating direction implicit discretization of a class of linear wave-type problems. *Numerische Mathematik*, 150(3):893–927, March 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-021-01262-z`.

Hagstrom:2023:CRB

[HK23] Thomas Hagstrom and Seungil Kim. Complete radiation boundary conditions for the Helmholtz equation II: domains with corners. *Numerische Mathematik*, 153(4):775–825, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01352-0`.

Hafemeyer:2020:FEE

[HKP20] Dominik Hafemeyer, Christian Kahle, and Johannes Pfefferer. Finite element error estimates in L^2 for regularized discrete approximations to the obstacle problem. *Numerische Mathematik*, 144 (1):133–156, January 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01081-3`.

Hairer:2020:LTA

[HL20a] Ernst Hairer and Christian Lubich. Long-term analysis of a variational integrator for charged-particle dynamics in a strong magnetic field. *Numerische Mathematik*, 144(3):699–728, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01093-z`.

Heltai:2020:PEE

[HL20b] Luca Heltai and Wenyu Lei. A priori error estimates of regularized elliptic problems. *Numerische Mathematik*, 146(3):571–596, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01152-w`.

Hochbruck:2021:CIE

[HL21a] Marlis Hochbruck and Jan Leibold. Correction to: An implicit-explicit time discretization scheme for second-order semilinear wave equations with application to dynamic boundary conditions. *Numerische Mathematik*, 147(4):901, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01190-y; https://link.springer.com/content/pdf/10.1007/s00211-021-01190-y.pdf`. See [HL21b].

Hochbruck:2021:IET

[HL21b] Marlis Hochbruck and Jan Leibold. An implicit-explicit time discretization scheme for second-order semilinear wave equations with application to dynamic boundary conditions. *Numerische Mathematik*, 147(4):869–899, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01184-w; https://link.springer.com/content/pdf/10.1007/s00211-021-01184-w.pdf`. See correction [HL21a].

Hu:2022:EFE

[HL22] Jiashun Hu and Buyang Li. Evolving finite element methods with an artificial tangential velocity for mean curvature flow and Willmore flow. *Numerische Mathematik*, 152(1):127–181, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01309-9`.

Hu:2024:FCF

[HLMZ24] Jun Hu, Yizhou Liang, Rui Ma, and Min Zhang. A family of conforming finite element divdiv complexes on cuboid meshes. *Numerische Mathematik*, 156(4):1603–1638, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01418-7`.

Hochbruck:2020:CLM

[HLO20] Marlis Hochbruck, Jan Leibold, and Alexander Ostermann. On the convergence of Lawson methods for semilinear stiff problems. *Numerische Mathematik*, 145(3):553–580, July 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01120-4; https://link.springer.com/content/pdf/10.1007/s00211-020-01120-4.pdf`.

Hairer:2022:LSI

[HLS22] Ernst Hairer, Christian Lubich, and Yanyan Shi. Large-stepsize integrators for charged-particle dynamics over multiple time scales. *Numerische Mathematik*, 151(3):659–691, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01298-9`.

Hairer:2020:FBA

[HLW20] Ernst Hairer, Christian Lubich, and Bin Wang. A filtered Boris algorithm for charged-particle dynamics in a strong magnetic field. *Numerische Mathematik*, 144(4):787–809, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01105-3; https://link.springer.com/content/pdf/10.1007/s00211-020-01105-3.pdf`.

Hauck:2024:SLS

[HM24] Moritz Hauck and Axel Målqvist. Super-localization of spatial network models. *Numerische Mathematik*, 156(3):901–926, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01410-1`.

Harbrecht:2024:MKM

[HMSS24] H. Harbrecht, M. Multerer, O. Schenk, and Ch. Schwab. Multiresolution kernel matrix algebra. *Numerische Mathematik*, 156 (3):1085–1114, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01409-8`.

Hassan:2023:ASR

[HMW23] Muhammad Hassan, Yvon Maday, and Yipeng Wang. Analysis of the single reference coupled cluster method for electronic

structure calculations: the full-coupled cluster equations. *Numerische Mathematik*, 155(1–2):121–173, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01371-x`.

Haberl:2021:CQO

[HPSV21] Alexander Haberl, Dirk Praetorius, Stefan Schimanko, and Martin Vohralík. Convergence and quasi-optimal cost of adaptive algorithms for nonlinear operators including iterative linearization and algebraic solver. *Numerische Mathematik*, 147(3):679–725, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01176-w; https://link.springer.com/content/pdf/10.1007/s00211-021-01176-w.pdf`.

Hangelbroek:2025:SSP

[HRW25] T. Hangelbroek, C. Rieger, and G. B. Wright. Spectral stability and perturbation results for kernel differentiation matrices on the sphere. *Numerische Mathematik*, 157(2):505–538, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01449-8`.

Hu:2020:SHD

[HSS+20] Weiwei Hu, Jiguang Shen, John R. Singler, Yangwen Zhang, and Xiaobo Zheng. A superconvergent hybridizable discontinuous Galerkin method for Dirichlet boundary control of elliptic PDEs. *Numerische Mathematik*, 144(2):375–411, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01090-2`.

Hraivoronska:2024:VCS

[HST24] Anastasiia Hraivoronska, André Schlichting, and Oliver Tse. Variational convergence of the Scharfetter–Gummel scheme to the aggregation-diffusion equation and vanishing diffusion limit. *Numerische Mathematik*, 156(6):2221–2292, December 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01445-4`.

Hamfeldt:2022:CFO

[HT22] Brittany Froese Hamfeldt and Axel G. R. Turnquist. A convergence framework for optimal transport on the sphere. *Numerische Mathematik*, 151(3):627–657, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01292-1`.

Huynh:2022:NKB

[Huy22] Ngoc Mai Monica Huynh. Newton–Krylov-BDDC deluxe solvers for non-symmetric fully implicit time discretizations of the bidomain model. *Numerische Mathematik*, 152(4):841–879, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01331-x`.

Harbrecht:2024:CBI

[HvR24] Helmut Harbrecht and Remo von Rickenbach. Compression of boundary integral operators discretized by anisotropic wavelet bases. *Numerische Mathematik*, 156(3):853–899, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01403-0`.

Hollbacher:2021:CSI

[HW21a] Susanne Höllbacher and Gabriel Wittum. Correction to: A sharp interface method using enriched finite elements for elliptic interface problems. *Numerische Mathematik*, 147(4):783, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01191-x; https://link.springer.com/content/pdf/10.1007/s00211-021-01191-x.pdf`. See [HW21b].

Hollbacher:2021:SIM

[HW21b] Susanne Höllbacher and Gabriel Wittum. A sharp interface method using enriched finite elements for elliptic interface problems. *Numerische Mathematik*, 147(4):759–781, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01180-0; https://link.springer.com/content/pdf/10.1007/s00211-021-01180-0.pdf`. See correction [HW21a].

Imbert-Gerard:2021:RGP

[IGS21] Lise-Marie Imbert-Gérard and Guillaume Sylvand. A roadmap for Generalized Plane Waves and their interpolation properties. *Numerische Mathematik*, 149(1):87–137, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01220-9`.

Ishizaka:2025:AMC

[Ish25] Hiroki Ishizaka. Anisotropic modified Crouzeix–Raviart finite element method for the stationary Navier–Stokes equation. *Numerische Mathematik*, 157(3):823–853, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01460-z`.

Ji:2023:ICR

[Ji23] Haifeng Ji. An immersed Crouzeix–Raviart finite element method in 2D and 3D based on discrete level set functions. *Numerische Mathematik*, 153(2–3):279–325, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01345-z`.

Jin:2022:CRD

[Jin22] Qinian Jin. Convergence rates of a dual gradient method for constrained linear ill-posed problems. *Numerische Mathematik*, 151 (4):841–871, August 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01300-4`.

Joly:2020:TBC

[JK20] Patrick Joly and Maryna Kachanovska. Transparent boundary conditions for wave propagation in fractal trees: convolution quadrature approach. *Numerische Mathematik*, 146(2): 281–334, October 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01145-9`.

John:2022:ASS

[JK22] Volker John and Petr Knobloch. On algebraically stabilized schemes for convection-diffusion-reaction problems. *Numerische Mathematik*, 152(3):553–585, November 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

URL https://link.springer.com/article/10.1007/s00211-022-01325-9.

Jacobs:2020:FAO

[JL20] Matt Jacobs and Flavien Léger. A fast approach to optimal transport: the back-and-forth method. *Numerische Mathematik*, 146(3):513–544, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01154-8.

Jin:2020:STD

[JLZ20] Bangti Jin, Buyang Li, and Zhi Zhou. Subdiffusion with time-dependent coefficients: improved regularity and second-order time stepping. *Numerische Mathematik*, 145(4):883–913, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01130-2.

Jiang:2023:NLR

[JNPS23] Tai-Xiang Jiang, Michael K. Ng, Junjun Pan, and Guang-Jing Song. Nonnegative low rank tensor approximations with multidimensional image applications. *Numerische Mathematik*, 153(1):141–170, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01328-6.

Junike:2024:NTC

[Jun24] Gero Junike. On the number of terms in the COS method for European option pricing. *Numerische Mathematik*, 156(2):533–564, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01402-1.

Ji:2022:NPF

[JWL22] Haifeng Ji, Feng Wang, and Zhilin Li. A new parameter free partially penalized immersed finite element and the optimal convergence analysis. *Numerische Mathematik*, 150(4):1035–1086, April 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01276-1.

Jin:2020:IIS

[JZ20] Bangti Jin and Zhi Zhou. Incomplete iterative solution of subdiffusion. *Numerische Mathematik*, 145(3):693–725, July 2020.

CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01128-w.

Jia:2025:CFG

[JZ25] Zhongxiao Jia and Kailiang Zhang. A CJ-FEAST GSVDsolver for computing a partial GSVD of a large matrix pair with the generalized singular values in a given interval. *Numerische Mathematik*, 157(3):855–895, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01466-7.

Jin:2022:VFP

[JZZ22] Shi Jin, Yuhua Zhu, and Enrique Zuazua. The Vlasov–Fokker–Planck equation with high dimensional parametric forcing term. *Numerische Mathematik*, 150(2):479–519, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01257-w.

Kong:2020:TBC

[KH20] Wang Kong and Zhongyi Huang. Transparent boundary conditions and numerical computation for singularly perturbed telegraph equation on unbounded domain. *Numerische Mathematik*, 145(2):345–382, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01115-1.

Kashiwabara:2020:PEE

[KK20] Takahito Kashiwabara and Tomoya Kemmochi. Pointwise error estimates of linear finite element method for Neumann boundary value problems in a smooth domain. *Numerische Mathematik*, 144(3):553–584, March 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-019-01098-8.

Kaarnioja:2022:FAP

[KKK+22a] Vesa Kaarnioja, Yoshihito Kazashi, Frances Y. Kuo, Fabio Nobile, and Ian H. Sloan. Fast approximation by periodic kernel-based lattice-point interpolation with application in uncertainty quantification. *Numerische Mathematik*, 150(1):33–77, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245

(electronic). URL http://link.springer.com/article/10.1007/s00211-021-01242-3; https://link.springer.com/content/pdf/10.1007/s00211-021-01242-3.pdf.

Korotov:2022:DFE

[KKK22b] Sergey Korotov, Michal Krízek, and Václav Kucera. On degenerating finite element tetrahedral partitions. *Numerische Mathematik*, 152(2):307–329, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01317-9.

Kovacs:2017:SCF

[KL17] Balázs Kovács and Christian Lubich. Stable and convergent fully discrete interior–exterior coupling of Maxwell's equations. *Numerische Mathematik*, 137(1):91–117, September 2017. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). See correction [NKL21].

Kovacs:2021:CEF

[KLL21] Balázs Kovács, Buyang Li, and Christian Lubich. A convergent evolving finite element algorithm for Willmore flow of closed surfaces. *Numerische Mathematik*, 149(3):595–643, November 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01238-z.

Kucera:2022:APC

[KLMNS22] Václav Kucera, Mária Lukácová-Medvid'ová, Sebastian Noelle, and Jochen Schütz. Asymptotic properties of a class of linearly implicit schemes for weakly compressible Euler equations. *Numerische Mathematik*, 150(1):79–103, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01240-5; https://link.springer.com/content/pdf/10.1007/s00211-021-01240-5.pdf.

Kressner:2023:IPL

[KMZ23] Daniel Kressner, Stefano Massei, and Junli Zhu. Improved ParaDiag via low-rank updates and interpolation. *Numerische Mathematik*, 155(1–2):175–209, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01372-w.

Kwon:2021:CWS

[KN21] Young-Sam Kwon and Antonin Novotný. Construction of weak solutions to compressible Navier–Stokes equations with general inflow/outflow boundary conditions via a numerical approximation. *Numerische Mathematik*, 149(4):717–778, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01237-0`.

Kazashi:2021:SPP

[KNV21] Yoshihito Kazashi, Fabio Nobile, and Eva Vidlicková. Stability properties of a projector-splitting scheme for dynamical low rank approximation of random parabolic equations. *Numerische Mathematik*, 149(4):973–1024, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01241-4; https://link.springer.com/content/pdf/10.1007/s00211-021-01241-4.pdf`.

Kopteva:2020:LPE

[Kop20] Natalia Kopteva. Lower a posteriori error estimates on anisotropic meshes. *Numerische Mathematik*, 146(1):159–179, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01137-9`.

Kurz:2021:FPE

[KPP+21] Stefan Kurz, Dirk Pauly, Dirk Praetorius, Sergey Repin, and Daniel Sebastian. Functional a posteriori error estimates for boundary element methods. *Numerische Mathematik*, 147(4):937–966, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01188-6; https://link.springer.com/content/pdf/10.1007/s00211-021-01188-6.pdf`.

Kritzer:2020:EWI

[KPW20] P. Kritzer, F. Pillichshammer, and G. W. Wasilkowski. On efficient weighted integration via a change of variables. *Numerische Mathematik*, 146(3):545–570, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01147-7`.

Kriel:2020:EIF

[Kri20] A. J. Kriel. Entropy inequalities for fully-discrete E-schemes. *Numerische Mathematik*, 144(2):347–356, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01089-9`.

Kriel:2021:EIF

[Kri21] A. J. Kriel. Entropy inequalities for fully-discrete E-schemes: a sequel. *Numerische Mathematik*, 149(1):139–149, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01227-2`.

Kuroki:2020:CCP

[KS20] Hidesato Kuroki and Kohei Soga. On convergence of Chorin's projection method to a Leray–Hopf weak solution. *Numerische Mathematik*, 146(2):401–433, October 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01144-w`.

Kirby:2024:HOB

[KS24] Robert C. Kirby and Daniel Shapero. High-order bounds-satisfying approximation of partial differential equations via finite element variational inequalities. *Numerische Mathematik*, 156(3):927–947, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01405-y`.

Kreuzer:2021:OPE

[KV21] Christian Kreuzer and Andreas Veeser. Oscillation in a posteriori error estimation. *Numerische Mathematik*, 148(1):43–78, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01194-8; https://link.springer.com/content/pdf/10.1007/s00211-021-01194-8.pdf`.

Kempf:2023:HDA

[KW23] Rüdiger Kempf and Holger Wendland. High-dimensional approximation with kernel-based multilevel methods on sparse grids. *Numerische Mathematik*, 154(3–4):485–519, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic).

URL https://link.springer.com/article/10.1007/s00211-023-01363-x.

Kirsch:2025:PMS

[KZ25] Andreas Kirsch and Ruming Zhang. The PML-method for a scattering problem for a local perturbation of an open periodic waveguide. *Numerische Mathematik*, 157(2):717–748, April 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01456-9.

Liu:2024:SME

[LCO24] Xuanyu Liu, Huajie Chen, and Christoph Ortner. Stability of the minimum energy path. *Numerische Mathematik*, 156(1):39–70, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01391-7.

LeHenaff:2023:GFW

[Le 23] Yoann Le Henaff. Grid-free weighted particle method applied to the Vlasov–Poisson equation. *Numerische Mathematik*, 155(3–4):289–344, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01378-4.

Leibold:2022:UEA

[Lei22] Jan Leibold. A unified error analysis for nonlinear wave-type equations with application to acoustic boundary conditions. *Numerische Mathematik*, 152(4):907–936, December 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01326-8.

Li:2021:BNS

[Li21] Buyang Li. A bounded numerical solution with a small mesh size implies existence of a smooth solution to the Navier–Stokes equations. *Numerische Mathematik*, 147(2):283–304, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01172-0.

Liu:2021:ADD

[Liu21] Hailiang Liu. Analysis of direct discontinuous Galerkin methods for multi-dimensional convection–diffusion equations. *Numerische*

Mathematik, 147(4):839–867, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01183-x`.

Li:2021:SAD

[LL21a] Xiliang Li and Xin Li. AS++ T-splines: arbitrary degree, nestedness and approximation. *Numerische Mathematik*, 148(4): 795–816, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01214-7`.

Lin:2021:MCS

[LL21b] Jing Lin and Pierre F. J. Lermusiaux. Minimum-correction second-moment matching: theory, algorithms and applications. *Numerische Mathematik*, 147(3):611–650, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01178-8`.

Larson:2024:STCb

[LL24] Mats G. Larson and Carl Lundholm. Space-time CutFEM on overlapping meshes II: simple discontinuous mesh evolution. *Numerische Mathematik*, 156(3):1055–1083, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01413-y`.

Larson:2024:STCa

[LLL24] Mats G. Larson, Anders Logg, and Carl Lundholm. Space-time CutFEM on overlapping meshes I: simple continuous mesh motion. *Numerische Mathematik*, 156(3):1015–1054, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01417-8`.

Li:2024:TLN

[LLMP24] Yuanyuan Li, Shuai Lu, Peter Mathé, and Sergei V. Pereverzev. Two-layer networks with the ReLU^k activation function: Barron spaces and derivative approximation. *Numerische Mathematik*, 156(1):319–344, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01384-6`.

Laurent:2021:MR

[LLS21] Philippe Laurent, Guillaume Legendre, and Julien Salomon. On the method of reflections. *Numerische Mathematik*, 148(2): 449–493, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01207-6`.

Lederer:2024:TDG

[LLS24] Philip L. Lederer, Christoph Lehrenfeld, and Paul Stocker. Trefftz discontinuous Galerkin discretization for the Stokes problem. *Numerische Mathematik*, 156(3):979–1013, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01404-z`.

Loring:2024:LWL

[LLW24] Terry A. Loring, Jianfeng Lu, and Alexander B. Watson. Locality of the windowed local density of states. *Numerische Mathematik*, 156(2):741–775, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01400-3`.

Lemoine:2021:RIE

[LM21] Jérôme Lemoine and Arnaud Münch. Resolution of the implicit Euler scheme for the Navier–Stokes equation through a least-squares method. *Numerische Mathematik*, 147(2):349–391, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01171-1`.

Lamsahel:2025:OFI

[LMS25] Noureddine Lamsahel, Carla Manni, and Hendrik Speleers. Outlier-free isogeometric discretizations for Laplace eigenvalue problems: closed-form eigenvalue and eigenvector expressions. *Numerische Mathematik*, 157(4):1397–1448, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01470-x`.

Lukacova-Medvidova:2025:PMN

[LMSY25] Mária Lukácová-Medvid'ová, Bangwei She, and Yuhuan Yuan. Penalty method for the Navier–Stokes–Fourier system with Dirichlet boundary conditions: convergence and error estimates.

Numerische Mathematik, 157(3):1023–1077, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01468-5`.

Lange:2020:NDF

[LO20] Marko Lange and Shin'ichi Oishi. A note on Dekker's FastTwoSum algorithm. *Numerische Mathematik*, 145(2):383–403, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01114-2`. See correction [LO21].

Lange:2021:CND

[LO21] Marko Lange and Shin'ichi Oishi. Correction to: A note on Dekker's FastTwoSum algorithm. *Numerische Mathematik*, 149(1):227–228, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01213-8; https://link.springer.com/content/pdf/10.1007/s00211-021-01213-8.pdf`. See [LO20].

Loisel:2020:EAS

[Loi20] Sébastien Loisel. Efficient algorithms for solving the p-Laplacian in polynomial time. *Numerische Mathematik*, 146 (2):369–400, October 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01141-z; https://link.springer.com/content/pdf/10.1007/s00211-020-01141-z.pdf`.

Lippert:2023:FHW

[LPU23] Laura Lippert, Daniel Potts, and Tino Ullrich. Fast hyperbolic wavelet regression meets ANOVA. *Numerische Mathematik*, 154 (1–2):155–207, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01358-8`.

Lelievre:2019:HMC

[LRS19] Tony Lelièvre, Mathias Rousset, and Gabriel Stoltz. Hybrid Monte Carlo methods for sampling probability measures on submanifolds. *Numerische Mathematik*, 143(2):379–421, October 2019. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01056-4`. See correction [LRS20].

Lelievre:2020:CHM

[LRS20] Tony Lelièvre, Mathias Rousset, and Gabriel Stoltz. Correction to: Hybrid Monte Carlo methods for sampling probability measures on submanifolds. *Numerische Mathematik*, 144(2):447–449, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01086-y; https://link.springer.com/content/pdf/10.1007/s00211-019-01086-y.pdf`. See [LRS19].

Lovbak:2021:MMC

[LSV21] Emil Løvbak, Giovanni Samaey, and Stefan Vandewalle. A multilevel Monte Carlo method for asymptotic-preserving particle schemes in the diffusive limit. *Numerische Mathematik*, 148 (1):141–186, May 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01201-y`.

Lafontaine:2022:SRE

[LSW22] D. Lafontaine, E. A. Spence, and J. Wunsch. A sharp relative-error bound for the Helmholtz h-FEM at high frequency. *Numerische Mathematik*, 150(1):137–178, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01253-0; https://link.springer.com/content/pdf/10.1007/s00211-021-01253-0.pdf`.

Liu:2022:FCP

[LV22] Xuefeng Liu and Tomás Vejchodský. Fully computable a posteriori error bounds for eigenfunctions. *Numerische Mathematik*, 152(1):183–221, September 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01304-0`.

Li:2021:FDL

[LW21] Buyang Li and Yifei Wu. A fully discrete low-regularity integrator for the 1D periodic cubic nonlinear Schrödinger equation. *Numerische Mathematik*, 149(1):151–183, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01226-3`.

Li:2022:AFE

[LY22] Peijun Li and Xiaokai Yuan. An adaptive finite element DtN method for the elastic wave scattering problem. *Numerische Mathematik*, 150(4):993–1033, April 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01273-4`.

Li:2020:MDM

[LZ20] Hao Li and Xiangxiong Zhang. On the monotonicity and discrete maximum principle of the finite difference implementation of C^0–Q^2 finite element method. *Numerische Mathematik*, 145 (2):437–472, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01110-6`.

Matsui:2022:PMN

[Mat22] Kazunori Matsui. A projection method for Navier–Stokes equations with a boundary condition including the total pressure. *Numerische Mathematik*, 152(3):663–699, November 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01323-x`.

Marchand:2020:TLP

[MCT20] Pierre Marchand, Xavier Claeys, and Pierre-Henri Tournier. Two-level preconditioning for h-version boundary element approximation of hypersingular operator with GenEO. *Numerische Mathematik*, 146(3):597–628, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01149-5`.

Miller:2021:MSA

[MH21] Philip Miller and Thorsten Hohage. Maximal spaces for approximation rates in ℓ^1-regularization. *Numerische Mathematik*, 149(2):341–374, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01225-4; https://link.springer.com/content/pdf/10.1007/s00211-021-01225-4.pdf`.

Mitsotakis:2025:CSN

[Mit25] Dimitrios Mitsotakis. The complex-step Newton method and its convergence. *Numerische Mathematik*, 157(3):951–992, June

2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01471-w.

Molinari:2024:IRL

[MMRV24] Cesare Molinari, Mathurin Massias, Lorenzo Rosasco, and Silvia Villa. Iterative regularization for low complexity regularizers. *Numerische Mathematik*, 156(2):641–689, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-023-01390-8.

Millar:2022:PNN

[MMV22] F. Millar, I. Muga, and K. G. Van der Zee. Projection in negative norms and the regularization of rough linear functionals. *Numerische Mathematik*, 150(4):1087–1121, April 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01278-z.

Mula:2024:MSM

[MN24] Olga Mula and Anthony Nouy. Moment-SoS methods for optimal transport problems. *Numerische Mathematik*, 156(4):1541–1578, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01422-x.

Matsuda:2025:PAN

[MN25] Takeru Matsuda and Yuji Nakatsukasa. Polynomial approximation of noisy functions. *Numerische Mathematik*, 157(4):1285–1311, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-025-01485-4.

Marmignon:2022:ERA

[MNR22] Claude Marmignon, Fabio Naddei, and Florent Renac. Energy relaxation approximation for compressible multicomponent flows in thermal nonequilibrium. *Numerische Mathematik*, 151(1):151–184, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01285-0.

Merle:2021:ATS

[MP21] Fabian Merle and Andreas Prohl. An adaptive time-stepping method based on a posteriori weak error analysis for large SDE systems. *Numerische Mathematik*, 149(2):417–462, October 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01233-4; https://link.springer.com/content/pdf/10.1007/s00211-021-01233-4.pdf`.

Merle:2023:PEA

[MP23] Fabian Merle and Andreas Prohl. A posteriori error analysis and adaptivity for high-dimensional elliptic and parabolic boundary value problems. *Numerische Mathematik*, 153(4):827–884, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01350-2`.

Melenk:2021:SRK

[MR21] Jens Markus Melenk and Alexander Rieder. On superconvergence of Runge–Kutta convolution quadrature for the wave equation. *Numerische Mathematik*, 147(1):157–188, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01161-9; https://link.springer.com/content/pdf/10.1007/s00211-020-01161-9.pdf`.

Matthes:2025:SPD

[MRS25] Daniel Matthes, Eva-Maria Rott, and André Schlichting. A structure preserving discretization for the Derrida–Lebowitz–Speer–Spohn equation based on diffusive transport. *Numerische Mathematik*, 157(4):1347–1395, August 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01475-6`.

Micu:2020:ACW

[MRT20] Sorin Micu, Ionel Roventa, and Laurentiu Emanuel Temereanca. Approximation of the controls for the wave equation with a potential. *Numerische Mathematik*, 144(4):835–887, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01106-2`.

Malyshev:2020:CDC

[MS20] Alexander Malyshev and Miloud Sadkane. Computing the distance to continuous-time instability of quadratic matrix polynomials. *Numerische Mathematik*, 145(1):149–165, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01108-0`.

Mor:2023:STR

[MSA23] Uria Mor, Boris Shustin, and Haim Avron. Solving trust region subproblems using Riemannian optimization. *Numerische Mathematik*, 154(1–2):1–33, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01360-0`.

Mazza:2021:MTS

[MSSCT21] M. Mazza, M. Semplice, S. Serra-Capizzano, and E. Travaglia. A matrix-theoretic spectral analysis of incompressible Navier–Stokes staggered DG approximations and a related spectrally based preconditioning approach. *Numerische Mathematik*, 149(4): 933–971, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01247-y`.

Matsue:2020:NVB

[MT20] Kaname Matsue and Akitoshi Takayasu. Numerical validation of blow-up solutions with quasi-homogeneous compactifications. *Numerische Mathematik*, 145(3):605–654, July 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01125-z`.

Modin:2020:WMN

[MV20] Klas Modin and Olivier Verdier. What makes nonholonomic integrators work? *Numerische Mathematik*, 145(2):405–435, June 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01126-y; https://link.springer.com/content/pdf/10.1007/s00211-020-01126-y.pdf`.

Nabet:2021:EEF

[Nab21] Flore Nabet. An error estimate for a finite-volume scheme for the Cahn–Hilliard equation with dynamic boundary condi-

tions. *Numerische Mathematik*, 149(1):185–226, September 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01230-7`.

Nataf:2020:CMA

[Nat20a] Frédéric Nataf. Correction to: Mathematical analysis of robustness of two-level domain decomposition methods with respect to inexact coarse solves. *Numerische Mathematik*, 146(2):435–436, October 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01146-8; https://link.springer.com/content/pdf/10.1007/s00211-020-01146-8.pdf`. See [Nat20b].

Nataf:2020:MAR

[Nat20b] Frédéric Nataf. Mathematical analysis of robustness of two-level domain decomposition methods with respect to inexact coarse solves. *Numerische Mathematik*, 144(4):811–833, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01102-6`. See correction [Nat20a].

Nick:2021:CSC

[NKL21] Jörg Nick, Balázs Kovács, and Christian Lubich. Correction to: Stable and convergent fully discrete interior–exterior coupling of Maxwell's equations. *Numerische Mathematik*, 147(4):997–1000, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01196-6; https://www.math.utah.edu/pub/tex/bib/nummath2010.bib; https://link.springer.com/content/pdf/10.1007/s00211-021-01196-6.pdf`. See [KL17].

Nick:2022:TDE

[NKL22] Jörg Nick, Balázs Kovács, and Christian Lubich. Time-dependent electromagnetic scattering from thin layers. *Numerische Mathematik*, 150(4):1123–1164, April 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01277-0`.

Nguyen:2021:MMD

[NN21] Dong T. P. Nguyen and Dirk Nuyens. MDFEM: Multivariate decomposition finite element method for elliptic PDEs with uniform random diffusion coefficients using higher-order QMC and FEM. *Numerische Mathematik*, 148(3):633–669, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01212-9`.

Nasdala:2021:EMA

[NP21a] Robert Nasdala and Daniel Potts. Efficient multivariate approximation on the cube. *Numerische Mathematik*, 147 (2):393–429, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01177-9; https://link.springer.com/content/pdf/10.1007/s00211-021-01177-9.pdf`.

Noferini:2021:NVS

[NP21b] Vanni Noferini and Federico Poloni. Nearest Ω-stable matrix via Riemannian optimization. *Numerische Mathematik*, 148(4):817–851, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01217-4; https://link.springer.com/content/pdf/10.1007/s00211-021-01217-4.pdf`.

Nurkanovic:2024:FES

[NSAD24] Armin Nurkanović, Mario Sperl, Sebastian Albrecht, and Moritz Diehl. Finite Elements with Switch Detection for direct optimal control of nonsmooth systems. *Numerische Mathematik*, 156(3): 1115–1162, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01412-z`.

Nie:2020:NAS

[NSD20] Daxin Nie, Jing Sun, and Weihua Deng. Numerical algorithm for the space-time fractional Fokker–Planck system with two internal states. *Numerische Mathematik*, 146(3):481–511, November 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01148-6`.

OReilly:2022:PNS

[ON22] Ossian O'Reilly and Jan Nordström. Provably non-stiff implementation of weak coupling conditions for hyperbolic problems. *Numerische Mathematik*, 150(2):551–589, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01263-y; https://link.springer.com/content/pdf/10.1007/s00211-021-01263-y.pdf`.

Otarola:2022:AAS

[OS22] Enrique Otárola and Abner J. Salgado. On the analysis and approximation of some models of fluids over weighted spaces on convex polyhedra. *Numerische Mathematik*, 151(1):185–218, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01272-5`.

Osborne:2025:FEA

[OS25] Yohance A. P. Osborne and Iain Smears. Finite element approximation of time-dependent mean field games with nondifferentiable Hamiltonians. *Numerische Mathematik*, 157(1):165–211, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01447-2`.

Oswald:2017:RRS

[OZ17] Peter Oswald and Weiqi Zhou. Random reordering in SOR-type methods. *Numerische Mathematik*, 135(4):1207–1220, April 2017. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/accesspage/article/10.1007/s00211-016-0829-7; http://link.springer.com/article/10.1007/s00211-016-0829-7`. See correction [OZ23].

Oswald:2023:CRR

[OZ23] Peter Oswald and Weiqi Zhou. Correction: Random reordering in SOR-type methods. *Numerische Mathematik*, 154(3–4):521–525, August 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01365-9`.

Pagliantini:2021:DRB

[Pag21] Cecilia Pagliantini. Dynamical reduced basis methods for Hamiltonian systems. *Numerische Mathematik*, 148(2):409–448, June 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01211-w; https://link.springer.com/content/pdf/10.1007/s00211-021-01211-w.pdf`.

Papadopoulos:2025:NAS

[Pap25] Ioannis P. A. Papadopoulos. Numerical analysis of the SIMP model for the topology optimization problem of minimizing compliance in linear elasticity. *Numerische Mathematik*, 157(1):213–248, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01438-3`.

Peralta:2022:MHP

[PK22] Gilbert Peralta and Karl Kunisch. Mixed and hybrid Petrov–Galerkin finite element discretization for optimal control of the wave equation. *Numerische Mathematik*, 150(2):591–627, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01258-9`.

Potzsche:2023:NDI

[Pöt23] Christian Pötzsche. Numerical dynamics of integrodifference equations. *Numerische Mathematik*, 154(1–2):249–281, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01354-y`.

Pieronek:2023:IRN

[PR23] Lukas Pieronek and Andreas Rieder. On the iterative regularization of non-linear illposed problems in L^∞. *Numerische Mathematik*, 154(1–2):209–247, June 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01359-7`.

Pozza:2021:FRK

[PS21] Stefano Pozza and Valeria Simoncini. Functions of rational Krylov space matrices and their decay properties. *Numerische Mathematik*, 148(1):99–126, May 2021. CODEN NUMMA7. ISSN

0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01198-4`.

Parzer:2022:CRA

[PS22] Fabian Parzer and Otmar Scherzer. On convergence rates of adaptive ensemble Kalman inversion for linear ill-posed problems. *Numerische Mathematik*, 152(2):371–409, October 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01314-y`.

Pestana:2024:FSI

[PS24] Jennifer Pestana and David J. Silvester. Fast solution of incompressible flow problems with two-level pressure approximation. *Numerische Mathematik*, 156(4):1579–1602, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01420-z`.

Qiu:2024:HDC

[QZ24] Weifeng Qiu and Lina Zhao. $H(\mathrm{div})$-conforming HDG methods for the stress-velocity formulation of the Stokes equations and the Navier–Stokes equations. *Numerische Mathematik*, 156(4):1639–1678, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01419-6`.

Rodriguez:2021:FPH

[RDYL21] Jose Israel Rodriguez, Jin-Hong Du, Yiling You, and Lek-Heng Lim. Fiber product homotopy method for multiparameter eigenvalue problems. *Numerische Mathematik*, 148(4):853–888, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01215-6`.

Real:2024:HRR

[Rea24] Rommel R. Real. Hanke–Raus rule for Landweber iteration in Banach spaces. *Numerische Mathematik*, 156(1):345–373, ???? 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01389-1`.

Regazzoni:2025:SLC

[Reg25] Francesco Regazzoni. Stabilization of loosely coupled schemes for 0D-3D fluid-structure interaction problems with application to cardiovascular modelling. *Numerische Mathematik*, 157(1): 249–306, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01452-z`.

Reid:2023:SPB

[RICO23] Tim W. Reid, Ilse C. F. Ipsen, Jon Cockayne, and Chris J. Oates. Statistical properties of BayesCG under the Krylov prior. *Numerische Mathematik*, 155(3–4):239–288, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01375-7`.

Rieder:2023:DEQ

[Rie23] Alexander Rieder. Double exponential quadrature for fractional diffusion. *Numerische Mathematik*, 153(2–3):359–410, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01342-8`.

Ranocha:2020:GRM

[RLK20] Hendrik Ranocha, Lajos Lóczi, and David I. Ketcheson. General relaxation methods for initial-value problems with application to multistep schemes. *Numerische Mathematik*, 146(4):875–906, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01158-4`.

Romisch:2024:APM

[RS24] W. Römisch and T. M. Surowiec. Asymptotic properties of Monte Carlo methods in elliptic PDE-constrained optimization under uncertainty. *Numerische Mathematik*, 156(5):1887–1914, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01436-5`.

Sagiv:2022:SCP

[Sag22] Amir Sagiv. Spectral convergence of probability densities for forward problems in uncertainty quantification. *Numerische Mathematik*, 150(4):1165–1186, April 2022. CODEN NUMMA7. ISSN

0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01281-4`.

Shao:2025:RAP

[SC25] Nian Shao and Wenbin Chen. Riemannian acceleration with preconditioning for symmetric eigenvalue problems. *Numerische Mathematik*, 157(1):307–354, February 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01451-0`.

Seibel:2022:BEM

[Sei22] Daniel Seibel. Boundary element methods for the wave equation based on hierarchical matrices and adaptive cross approximation. *Numerische Mathematik*, 150(2):629–670, February 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01259-8; https://link.springer.com/content/pdf/10.1007/s00211-021-01259-8.pdf`.

Shi:2024:DAM

[Shi24] Yanyan Shi. Drift approximation by the modified Boris algorithm of charged-particle dynamics in toroidal geometry. *Numerische Mathematik*, 156(3):1197–1217, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01416-9`.

Simoes:2022:EDL

[SMdD22] Alexandre Anahory Simoes, Juan Carlos Marrero, and David Martín de Diego. Exact discrete Lagrangian mechanics for nonholonomic mechanics. *Numerische Mathematik*, 151(1):49–98, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01283-2`.

Sande:2020:EEE

[SMS20] Espen Sande, Carla Manni, and Hendrik Speleers. Explicit error estimates for spline approximation of arbitrary smoothness in isogeometric analysis. *Numerische Mathematik*, 144(4):889–929, April 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01097-9`.

Sande:2022:RTP

[SMS22] Espen Sande, Carla Manni, and Hendrik Speleers. Ritz-type projectors with boundary interpolation properties and explicit spline error estimates. *Numerische Mathematik*, 151(2):475–494, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01286-z`.

Sekine:2020:NFU

[SNO20] Kouta Sekine, Mitsuhiro T. Nakao, and Shin'ichi Oishi. A new formulation using the Schur complement for the numerical existence proof of solutions to elliptic problems: without direct estimation for an inverse of the linearized operator. *Numerische Mathematik*, 146(4):907–926, December 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01155-7; https://link.springer.com/content/pdf/10.1007/s00211-020-01155-7.pdf`.

Soga:2024:MAF

[Sog24] Kohei Soga. Mathematical analysis of a finite difference method for inhomogeneous incompressible Navier–Stokes equations. *Numerische Mathematik*, 156(5):1809–1853, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01421-y`.

Schwarzacher:2022:NAF

[SS22] Sebastian Schwarzacher and Bangwei She. On numerical approximations to fluid-structure interactions involving compressible fluids. *Numerische Mathematik*, 151(1):219–278, May 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01275-2`.

Saha:2023:RCS

[SS23a] Jitraj Saha and Mehakpreet Singh. Rate of convergence and stability analysis of a modified fixed pivot technique for a fragmentation equation. *Numerische Mathematik*, 153(2–3):531–555, March 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01344-0`.

Stevenson:2023:IOP

[SS23b] Rob Stevenson and Johannes Storn. Interpolation operators for parabolic problems. *Numerische Mathematik*, 155(1–2):211–238, October 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01373-9`.

Schwarzacher:2025:SEE

[SST25] Sebastian Schwarzacher, Bangwei She, and Karel Tuma. Stability and error estimates of a linear numerical scheme approximating nonlinear fluid–structure interactions. *Numerische Mathematik*, 157(3):993–1021, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01461-y`.

Sanchez:2021:PPE

[SSVS21] Nestor Sánchez, Tonatiuh Sánchez-Vizuet, and Manuel E. Solano. A priori and a posteriori error analysis of an unfitted HDG method for semi-linear elliptic problems. *Numerische Mathematik*, 148 (4):919–958, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01221-8`.

Schillings:2020:CLA

[SSW20] Claudia Schillings, Björn Sprungk, and Philipp Wacker. On the convergence of the Laplace approximation and noise-level-robustness of Laplace-based Monte Carlo methods for Bayesian inverse problems. *Numerische Mathematik*, 145 (4):915–971, August 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01131-1; https://link.springer.com/content/pdf/10.1007/s00211-020-01131-1.pdf`.

Sun:2022:NAR

[Sun22] Weiwei Sun. New analysis and recovery technique of mixed FEMs for compressible miscible displacement in porous media. *Numerische Mathematik*, 150(1):179–215, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01249-w`.

Shen:2021:UPP

[SX21] Jie Shen and Jie Xu. Unconditionally positivity preserving and energy dissipative schemes for Poisson–Nernst–Planck equations. *Numerische Mathematik*, 148(3):671–697, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01203-w`.

Szostok:2024:GTB

[Szo24] Tomasz Szostok. A generalization of a theorem of Brass and Schmeisser. *Numerische Mathematik*, 156(5):1915–1925, October 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01434-7`.

Takayasu:2022:CRN

[TLO22a] Akitoshi Takayasu, Jean-Philippe Lessard, and Hisashi Okamoto. Correction to: Rigorous numerics for nonlinear heat equations in the complex plane of time. *Numerische Mathematik*, 151 (3):751–752, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01299-8`. See [TLO22b].

Takayasu:2022:RNN

[TLO22b] Akitoshi Takayasu, Jean-Philippe Lessard, and Hisashi Okamoto. Rigorous numerics for nonlinear heat equations in the complex plane of time. *Numerische Mathematik*, 151(3):693–750, July 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01291-2`. See correction [TLO22a].

Trefethen:2021:ENC

[TNW21] Lloyd N. Trefethen, Yuji Nakatsukasa, and J. A. C. Weideman. Exponential node clustering at singularities for rational approximation, quadrature, and PDEs. *Numerische Mathematik*, 147(1):227–254, January 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-020-01168-2; https://link.springer.com/content/pdf/10.1007/s00211-020-01168-2.pdf`.

Tropp:2022:RBK

[Tro22] Joel A. Tropp. Randomized block Krylov methods for approximating extreme eigenvalues. *Numerische Mathematik*, 150(1): 217–255, January 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01250-3`.

Uhlig:2024:ZNN

[Uhl24] Frank Uhlig. Zhang neural networks: an introduction to predictive computations for discretized time-varying matrix problems. *Numerische Mathematik*, 156(2):691–739, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01393-5`.

VanBuggenhout:2023:GSO

[Van23] Niel Van Buggenhout. On generating Sobolev orthogonal polynomials. *Numerische Mathematik*, 155(3–4):415–443, December 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01379-3`.

vandenBerg:2024:VIS

[vdBBS24] Jan Bouwe van den Berg, Maxime Breden, and Ray Sheombarsing. Validated integration of semilinear parabolic PDEs. *Numerische Mathematik*, 156(4):1219–1287, August 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-024-01415-w`.

Veldman:2022:FRT

[VZ22] D. W. M. Veldman and E. Zuazua. A framework for randomized time-splitting in linear-quadratic optimal control. *Numerische Mathematik*, 151(2):495–549, June 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01290-3`.

Wang:2021:HMF

[Wan21] Haiyong Wang. How much faster does the best polynomial approximation converge than Legendre projection? *Numerische Mathematik*, 147(2):481–503, February 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01173-z`.

Winkler:2020:EEV

[Win20] Max Winkler. Error estimates for variational normal derivatives and Dirichlet control problems with energy regularization. *Numerische Mathematik*, 144(2):413–445, February 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-019-01091-1`.

Wu:2021:CTR

[WM21] Bowei Wu and Per-Gunnar Martinsson. Corrected trapezoidal rules for boundary integral equations in three dimensions. *Numerische Mathematik*, 149(4):1025–1071, December 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01244-1`.

Wu:2021:PPC

[WS21] Kailiang Wu and Chi-Wang Shu. Provably physical-constraint-preserving discontinuous Galerkin methods for multidimensional relativistic MHD equations. *Numerische Mathematik*, 148(3):699–741, July 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01209-4`.

Wang:2022:MSC

[WZL22] Li Wang, Lei-Hong Zhang, and Ren-Cang Li. Maximizing sum of coupled traces with applications. *Numerische Mathematik*, 152(3):587–629, November 2022. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01322-y`.

Xiang:2020:ODR

[XL20] Shuhuang Xiang and Guidong Liu. Optimal decay rates on the asymptotics of orthogonal polynomial expansions for functions of limited regularities. *Numerische Mathematik*, 145(1):117–148, May 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-020-01113-3`.

Xu:2023:BLD

[XN23] Yiming Xu and Akil Narayan. Budget-limited distribution learning in multifidelity problems. *Numerische Mathematik*, 153(1):171–212, January 2023. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-022-01337-5.

Xavier:2021:EEF

[XRV21] Juliana C. Xavier, Mauro A. Rincon, and Daniel G. Alfaro Vigo. Error estimates for a fully discrete spectral scheme for nonlinear Boussinesq systems. *Numerische Mathematik*, 149(3):679–716, November 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01239-y.

Xu:2021:AFS

[XY21] Liwei Xu and Tao Yin. Analysis of the Fourier series Dirichlet-to-Neumann boundary condition of the Helmholtz equation and its application to finite element methods. *Numerische Mathematik*, 147(4):967–996, April 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL http://link.springer.com/article/10.1007/s00211-021-01195-7.

Yi:2024:PPE

[YL24] Son-Young Yi and Sanghyun Lee. Physics-preserving enriched Galerkin method for a fully-coupled thermo-poroelasticity model. *Numerische Mathematik*, 156(3):949–978, June 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01406-x.

Yserentant:2020:ESL

[Yse20] Harry Yserentant. On the expansion of solutions of Laplace-like equations into traces of separable higher dimensional functions. *Numerische Mathematik*, 146(1):219–238, September 2020. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-020-01138-8; https://link.springer.com/content/pdf/10.1007/s00211-020-01138-8.pdf.

Yserentant:2024:IMS

[Yse24] Harry Yserentant. An iterative method for the solution of Laplace-like equations in high and very high space dimensions. *Numerische Mathematik*, 156(2):777–811, April 2024. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL https://link.springer.com/article/10.1007/s00211-024-01401-2.

Zeng:2023:PLM

[Zen23] Chao Zeng. Proximal linearization methods for Schatten p-quasi-norm minimization. *Numerische Mathematik*, 153(1):213–248, January 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01335-7`.

Zhang:2021:NMS

[Zha21] Ruming Zhang. Numerical methods for scattering problems in periodic waveguides. *Numerische Mathematik*, 148 (4):959–996, August 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01229-0; https://link.springer.com/content/pdf/10.1007/s00211-021-01229-0.pdf`.

Zhang:2025:FMB

[Zha25] Shangyou Zhang. A family of P_4 macro-bubble enriched C^1–P_k finite elements on triangular meshes. *Numerische Mathematik*, 157(3):1079–1132, June 2025. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-025-01467-6`.

Zhou:2023:NMC

[ZJK23] Guanyu Zhou, Feifei Jing, and Takahito Kashiwabara. The numerical methods for the coupled fluid flow under the leak interface condition of the friction-type. *Numerische Mathematik*, 153 (4):729–773, April 2023. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-023-01348-w`.

Zeng:2021:AMC

[ZJN21] Chao Zeng, Tai-Xiang Jiang, and Michael K. Ng. An approximation method of CP rank for third-order tensor completion. *Numerische Mathematik*, 147(3):727–757, March 2021. CODEN NUMMA7. ISSN 0029-599X (print), 0945-3245 (electronic). URL `http://link.springer.com/article/10.1007/s00211-021-01185-9`.

Zhang:2022:TFG

[ZZ22] Qian Zhang and Zhimin Zhang. Three families of grad div-conforming finite elements. *Numerische Mathematik*, 152(3):701–724, November 2022. CODEN NUMMA7. ISSN 0029-599X

(print), 0945-3245 (electronic). URL `https://link.springer.com/article/10.1007/s00211-022-01321-z`.