

# A Bibliography of Publications of Ulrich Ruede

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## Abstract

This bibliography records publications of Ulrich Ruede.

## Title word cross-reference

**-Solution** [GHRS92a, GHRS92b].

**abstraction** [Rüd93a]. **Accurate** [Rüd88a, KR04]. **Adaptive** [MR89, Rüd93f, Rüd91a, Rüd92a, Rüd94, PR93, Rüd92c, Rüd92d, Rüd93d]. **Algebraic** [MRZ88, RR93]. **Algorithmen** [ZFR88]. **algorithms** [Rüd93a]. **AMG** [MRZ88, RR93]. **Analysis** [BR92]. **Anwendung** [Rüd85]. **Application** [MRZ88]. **Aspekte** [ZFR88]. **Augmented** [DLP<sup>+</sup>21].

**based** [Rüd93b]. **Basis** [Rüd92b]. **Behandlung** [Rüd88b]. **Berechnung**

[Rüd85, SR90]. **Betriebssystem** [ZFR88]. **Betriebssystem-** [ZFR88]. **Block** [DLP<sup>+</sup>21]. **Boundary** [BGR92].

**Cimmino** [DLP<sup>+</sup>21]. **Combination** [BGR92, GHRS92a, GHRS92b]. **Composite** [MR89]. **Computation** [Rüd88a]. **Computational** [JKR08, Rue02, Rüd93d]. **computations** [JR94]. **computing** [KR04]. **Constrained** [MRZ88]. **constructing** [Rüd93c]. **Convergence** [MR89]. **Corners** [Rüd89]. **Corrections** [Rüd89]. **cycle** [Rüd92d].

**Data** [Rüd92a, Rüd93a]. **Development** [FR87, JRS88]. **Differential** [MR90, PR93]. **Differentialgleichungen** [Rüd88b]. **digitalen** [Rüd85]. **Discretizations** [Rüd86].

**Ebene** [FR90]. **Editorial** [RR03]. **Effect** [Rüd89]. **efficiency** [Rüd92c]. **Element** [RZ92, JR94, Rüd93c]. **Eliminating**

- [Rüd89]. **Elliptic**  
[BGR92, MR90, Rüd91b, KR04].  
**elliptischen** [Rüd88b]. **Engineering**  
[JKR08, Rue02, ZFR88]. **Equation**  
[Rüd88a]. **Equations**  
[MR90, Rüd91b, PR93]. **Erlangen** [Rue02].  
**Erlangen-Nuremberg** [Rue02]. **Error**  
[Rüd93b]. **estimators** [Rüd93b].  
**Expansion** [JRS88]. **Extensions** [DLP<sup>+</sup>21].  
**Extrapolation**  
[BRSZ94, BGR92, KR04, Rüd87, Rüd91b,  
Rüd92b, Rüd93c, Rüd93e, JR94].
- Fast** [MR89]. **Finite**  
[MR89, RZ92, JR94, Rüd93c]. **Full**  
[DLP<sup>+</sup>21]. **Fully** [Rüd93f, Rüd92c, Rüd92d].
- Gauß** [PR93]. **Grid** [BRSZ94, BGR92,  
GHRS92a, GHRS92b, MR89, Rüd93e]. **grids**  
[PR93].
- Hierarchical** [Rüd92b]. **Higher**  
[MR90, Rüd91a, Rüd93c]. **Höhenmodellen**  
[Rüd85].
- Implicit** [JR94]. **Intensive** [BR92]. **Issue**  
[JKR08]. **Iterative** [Rüd92a, Rüd94].
- klassischer** [SR90]. **Kommando** [FR90].  
**Konzepte** [FR90].
- Laplace** [Rüd88a]. **Layout** [RR93]. **Local**  
[MR90, Rüd89].
- Machines** [GHRS92a]. **Macro** [JRS88].  
**Mathematical** [Rüd93d]. **Matrix** [SR90].  
**Matrix-Multiplikationen** [SR90].  
**Mehrgittermethode** [Rüd85]. **Method**  
[DLP<sup>+</sup>21, MR89, RZ86a, Rüd92b, RZ92,  
Rüd94, Rüd92c, Rüd92d]. **Methods**  
[AR91, BRSZ94, MR90, RR93, Rüd93f,  
Rüd86, RZ86b, Rüd87, Rüd91a, Rüd92a,  
Rüd93e, JR94, Rüd93c, Rüd93d]. **Multigrid**  
[AR91, MRZ88, RR93, Rüd93f, Rüd86,  
RZ86a, RZ86b, Rüd87, Rüd91a, Rüd92c,  
Rüd92d]. **Multilevel** [Rüd92a, Rüd93e,  
Rüd94, JR94, PR93, Rüd93a, Rüd93d].  
**Multiple** [Rüd87]. **Multiplikationen**  
[SR90]. **Multiprocessor** [GHRS92a].
- Networks** [GHRS92a, GHRS92b].  
**Numerical** [FR87]. **Numerically** [BR92].  
**numerischen** [Rüd88b]. **Nuremberg**  
[Rue02].
- Operating** [FR87]. **Optimization**  
[BR92, MRZ88, RR93]. **Order**  
[MR90, Rüd91a, Rüd93c].
- Parabolic** [BRSZ94]. **Parallel**  
[FR87, GHRS92a, GHRS92b]. **parallelen**  
[FR90, ZFR88]. **Partial** [MR90, PR93].  
**partiellen** [Rüd88b]. **PDEs**  
[GHRS92a, GHRS92b]. **Performance**  
[BR92]. **Photogrammetrie** [Rüd85].  
**Poisson's** [Rüd88a]. **Pollution** [Rüd89].  
**Preconditioning** [GHRS92a, GHRS92b].  
**Problems** [BRSZ94, BGR92, KR04].  
**Programmierung** [FR90]. **Programs**  
[BR92, Rue02].
- Quadratic** [MRZ88].
- Rank** [DLP<sup>+</sup>21]. **Rectangular** [DLP<sup>+</sup>21].  
**Reentrant** [Rüd89]. **Refinement** [MR90].  
**Related** [Rüd91b]. **relaxation** [PR93].  
**robustness** [Rüd92c].
- Schnellere** [SR90]. **Science** [JKR08].  
**Scientific** [JRS88]. **Singular**  
[Rüd88a, KR04]. **Singularitäten** [Rüd88b].  
**Singularities** [RZ86a, RZ92]. **Software**  
[FR87, JRS88, ZFR88].  
**Software-Engineering-Aspekte** [ZFR88].  
**Solution**  
[DLP<sup>+</sup>21, GHRS92a, GHRS92b, PR93].  
**Solutions** [Rüd88a, KR04]. **Solvers**  
[Rüd92a]. **Solving** [Rüd91b]. **Sparse**

[BRSZ94, BGR92, GHRS92a, GHRS92b, Rüd93e, PR93].

**Sparse-Grid-Preconditioning**

[GHRS92a, GHRS92b]. **Special** [JKR08].

**splittings** [Rüd93b]. **stable** [Rüd93b].

**Structures** [Rüd92a]. **Support** [FR87].

**System** [FR87]. **Systematic** [JRS88].

**Systems** [DLP<sup>+</sup>21].

**tau** [Rüd87]. **tau-Extrapolation** [Rüd87].

[BR92]

**Technique** [GHRS92a, GHRS92b].

**Techniques** [BGR92, Rüd91b, KR04,

Rüd93a, Rüd93c, Rüd93d]. **Theory** [MR89].

**Tool** [JRS88]. **Toolbox** [AR91]. **Treatment**

[RZ86a, RZ92].

**University** [Rue02]. **Unix** [FR90].

**Unix-Kommando-Ebene** [FR90].

**V** [Rüd92d]. **V-cycle** [Rüd92d]. **Value**

[BGR92]. **Volume** [MR89].

**Werkzeuge** [FR90]. **Workbench** [RZ86b].

**Workstation** [GHRS92a, GHRS92b].

**zur** [FR90, Rüd85, Rüd88b].

## References

**Arbesmeier:1991:TMM**

[AR91] M. Arbesmeier and U. Rüd. A toolbox for multigrid methods. Bericht I-9136, Institut für Informatik, TU München, September 1991. URL <file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/mgwb.ps.Z>.

[DLP<sup>+</sup>21]

**Bungartz:1992:ECS**

[BGR92] H. Bungartz, M. Griebel, and U. Rüd. Extrapolation, combination and sparse grid techniques

for elliptic boundary value problems. SFB Bericht 342/10/92 A, Institut für Informatik, TU München, May 1992. to be published in *Computer Methods in Applied Mechanics and Engineering* (1994).

**Bonk:1992:PAO**

T. Bonk and U. Rüd. Performance analysis and optimization of numerically intensive programs. SFB Bericht 342/26/92 A, Institut für Informatik, TU München, November 1992. URL <file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/performance.ps.Z>.

**Balder:1994:SGE**

[BRSZ94]

R. Balder, U. Rüd, S. Schneider, and C. Zenger. Sparse grid and extrapolation methods for parabolic problems. In *Proceedings of the 10th International Conference on Computational Methods in Water Resources, Heidelberg, 19.-22. Juli 1994*, 1994. URL <file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/heidel94.ps.Z>.

**Dumitrasc:2021:EAB**

Andrei Dumitrasc, Philippe Leleux, Constantin Popa, Ulrich Ruede, and Daniel Ruiz. Extensions of the augmented block Cimmino method to the solution of full rank rectangular systems. *SIAM Journal on Scientific Computing*, 43(5):S516–S539, 2021. CODEN

SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

**Foessmeier:1987:OSS**

- [FR87] R. Fößmeier and U. Ruede. Operating system support for parallel numerical software development. Bericht I-8712, Institut für Informatik, TU München, October 1987.

**Foessmeier:1990:KWP**

- [FR90] R. Fößmeier and U. Ruede. Konzepte und Werkzeuge zur parallelen Programmierung auf der Unix-Kommando-Ebene. *unix/mail*, 8(2):66–73, 1990.

**Griebel:1992:CTPa**

- [GHR92a] M. Griebel, W. Huber, U. Ruede, and T. Störtkuhl. The combination technique for parallel sparse-grid-preconditioning and -solution of PDEs on multiprocessor machines and workstation networks. SFB Bericht 342/11/92 A, Institut für Informatik, TU München, May 1992.

**Griebel:1992:CTPb**

- [GHR92b] M. Griebel, W. Huber, U. Ruede, and T. Störtkuhl. The combination technique for parallel sparse-grid-preconditioning or -solution of PDEs on workstation networks. In L. Bougé, M. Cosnard, Y. Robert, and D. Trystram, editors, *Parallel Processing: CONPAR 92 – VAPP V*, volume 634 of *Lecture Notes in Computer Science*, pages 217–228. Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK /

etc., 1992. Proceedings of the Second Joint International Conference on Vector and Parallel Processing, Lyon, France, September 1–4, 1992.

**Johnson:2008:SIC**

- [JKR08] Chris Johnson, David Keyes, and Ulrich Ruede. Special issue on computational science and engineering. *SIAM Journal on Scientific Computing*, 30(6):vii, ??? 2008. CODEN SJOCE3. ISSN 1064-8275 (print), 1095-7197 (electronic).

**Jung:1994:IEM**

- [JR94] M. Jung and U. Ruede. Implicit extrapolation methods for multilevel finite element computations. In T. Manteuffel, editor, *Preliminary Proceedings of the Colorado Conference on Iterative Methods, Breckenridge, Colorado, April 4-10, 1994*, 1994. URL [file:///www.tu-chemnitz.de/pub/Local/mathematik/Ruede/impl\\_extrapolation.ps.Z](file:///www.tu-chemnitz.de/pub/Local/mathematik/Ruede/impl_extrapolation.ps.Z).

**Jaensch:1988:MET**

- [JRS88] Christian R. Jaensch, Ulrich Ruede, and Klaus Schnepfer. Macro expansion, a tool for the systematic development of scientific software. Report I-8814, Institut für Informatik, TU München, München, West Germany, November 1988.

**Koestler:2004:ETC**

- [KR04] H. Koestler and U. Ruede. Extrapolation techniques for computing accurate solutions of ellip-

tic problems with singular solutions. In *Computational science—ICCS 2004. Part IV*, volume 3039 of *Lecture Notes in Comput. Sci.*, pages 410–417. Springer, Berlin, 2004.

**McCormick:1989:FVC**

- [MR89] S. McCormick and U. Rüde. A finite volume convergence theory for the fast adaptive composite grid method. Technical report, University of Colorado at Denver, 1989. To be published in *Applied Numerical Mathematics* (14) 1994, Elsevier.

**McCormick:1990:LRH**

- [MR90] S. McCormick and U. Rüde. On local refinement higher order methods for elliptic partial differential equations. *International Journal of High Speed Computing*, 2(4):311–334, 1990. Also available as TU-Bericht I-9034.

**Muszynski:1988:AAM**

- [MRZ88] P. Muszynski, U. Rüde, and C. Zenger. Application of algebraic multigrid (AMG) to constrained quadratic optimization. Bericht I-8801, Institut für Informatik, TU München, January 1988.

**Pflaum:1993:GAR**

- [PR93] C. Pflaum and U. Rüde. Gauß' adaptive relaxation for the multilevel solution of partial differential equations on sparse grids. SFB-Bericht 342/13/93 A, Institut für Informatik, TU München, September 1993. URL

<file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/gauss.ps>. Z. to appear in the proceedings of the 2nd Gauß Symposium, Munich, Aug. 2–7, 1993.

**Regler:1993:LOA**

- [RR93] H. Regler and U. Rüde. Layout optimization with algebraic multigrid methods (AMG). In *Proceedings of the Sixth Copper Mountain Conference on Multigrid Methods, Copper Mountain, April 4-9, 1993*, Conference Publication. NASA, 1993. URL <file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/amg.ps>. Z.

**Renaut:2003:E**

- [RR03] Rosemary A. Renaut and Ulrich Ruede. Editorial. *Future Generation Computer Systems*, 19(8):1265, November 2003. CODEN FGSEVI. ISSN 0167-739X (print), 1872-7115 (electronic).

**Ruede:1985:AMB**

- [Rüd85] U. Rüde. Anwendung der Multigittermethode zur Berechnung von digitalen Höhenmodellen in der Photogrammetrie. Bericht I-8525, Institut für Informatik, TU München, November 1985.

**Ruede:1986:DMM**

- [Rüd86] U. Rüde. Discretizations for multigrid methods. In W. Hackbusch and U. Trottenberg, editors, *Multigrid Methods: Special Topics and Applications, Papers presented at the 2nd European Conference on Multigrid*

*Methods, October 1-4, 1985*, volume 110 of *GMD Studien*, pages ??-?? (of 178). Cologne, May 1986. ISBN 3-88457-110-9. LCCN QA377.E87 1985. Also available as TU-Bericht I-8519.

**Ruede:1987:MTE**

- [Rüd87] U. Rüde. Multiple tau-extrapolation for multigrid methods. Bericht I-8701, Institut für Informatik, TU München, January 1987.

**Ruede:1988:ACS**

- [Rüd88a] U. Rüde. On the accurate computation of singular solutions of Laplace's and Poisson's equation. In S. F. McCormick, editor, *Multigrid Methods: Theory, Applications, Supercomputing: Proceedings of the Third Copper Mountain Conference on Multigrid Methods, April 5-10, 1987*, pages ??-?? (of xiv + 644). Marcel Dekker, New York, NY, USA, 1988. ISBN 0-8247-7979-7. LCCN QA377 .M9431 1988.

**Ruede:1988:NBS**

- [Rüd88b] U. Rüde. Zur numerischen Behandlung von Singularitäten in elliptischen partiellen Differentialgleichungen. Bericht I-8810, Institut für Informatik, TU München, August 1988.

**Ruede:1989:LCE**

- [Rüd89] U. Rüde. Local corrections for eliminating the pollution effect of reentrant corners. In J. Mandel, editor, *Proceedings of the Fourth Copper Mountain Conference on Multigrid Methods, April*

*9-14, 1989*, pages 365–382. SIAM, Philadelphia, PA, USA, 1989.

**Ruede:1991:AHO**

- [Rüd91a] U. Rüde. Adaptive higher order multigrid methods. In W. Hackbusch and U. Trottenberg, editors, *Proceedings of the Third European Conference on Multigrid Methods, October 1-4, 1990*, pages 339–351. Birkhäuser, Cambridge, MA, USA; Berlin, Germany; Basel, Switzerland, 1991. International Series of Numerical Mathematics, Vol. 98.

**Ruede:1991:ERT**

- [Rüd91b] U. Rüde. Extrapolation and related techniques for solving elliptic equations. Bericht I-9135, Institut für Informatik, TU München, September 1991. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/extra\\_rel.ps.Z](file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/extra_rel.ps.Z).

**Ruede:1992:DSM**

- [Rüd92a] U. Rüde. Data structures for multilevel adaptive methods and iterative solvers. Bericht I-9217, Institut für Informatik, TU München, May 1992. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/data\\_structures.ps.Z](file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/data_structures.ps.Z).

**Ruede:1992:HBE**

- [Rüd92b] U. Rüde. The hierarchical basis extrapolation method. *SIAM J. Sci. Stat. Comput.*, 13(1):307–318, January 1992. CODEN SIJCD4. ISSN 0196-5204. Proceedings of the First Copper Mountain

Conference on Iterative Methods,  
April 1-5, 1990, T. Manteuffel ed.

**Ruede:1992:REF**

- [Rüd92c] U. Røde. On the robustness and efficiency of the fully adaptive multigrid method. In A. Quarteroni, editor, *Proceedings of the Sixth International Conference on Domain Decomposition in Science and Engineering, Como, Italy, June 15-19, 1992*, pages ??-?? (of xxii + 484). Amer. Math. Soc., Providence, RI, USA, 1992. ISBN 0-8218-5158-6. LCCN QA402.2 .I55 1992.

**Ruede:1992:VCF**

- [Rüd92d] U. Røde. On the V-cycle of the fully adaptive multigrid method. Bericht I-9215, Institut für Informatik, TU München, May 1992. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/kiel93.ps.Z](http://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/kiel93.ps.Z). to be published in the proceedings of the 9th GAMM Seminar, Kiel, January 22-24, 1993.

**Ruede:1993:DAT**

- [Rüd93a] U. Røde. Data abstraction techniques for multilevel algorithms. In *Proceedings of the GAMM-Seminar on Multigrid Methods, Sept. 21 - 25, 1992 in Gosen, Germany*. Institut für Angewandte Analysis und Stochastik, Berlin, Germany, 1993. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/gosen92.ps.Z](http://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/gosen92.ps.Z). Report 5, ISSN 0942-9077.

**Ruede:1993:EEB**

- [Rüd93b] U. Røde. Error estimators based on stable splittings. Submitted to the proceedings of the 7th International Conference On domain Decomposition, Penn State University, 1993. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/ddm7.ps.Z](http://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/ddm7.ps.Z).

**Ruede:1993:ETC**

- [Rüd93c] U. Røde. Extrapolation techniques for constructing higher order finite element methods. Bericht I-9304, Institut für Informatik, TU München, 1993. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/extrapolation.ps.Z](http://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/extrapolation.ps.Z).

**Ruede:1993:MCT**

- [Rüd93d] U. Røde. *Mathematical and computational techniques for multi-level adaptive methods*, volume 13 of *Frontiers in Applied Mathematics*. SIAM, Philadelphia, PA, USA, 1993. ISBN 0-89871-320-X. xii + 140 pp. LCCN QA377 .R87 1993.

**Ruede:1993:MES**

- [Rüd93e] U. Røde. Multilevel, extrapolation, and sparse grid methods. SFB Bericht 342/10/93 A/I-9319, Institut für Informatik, TU München, July 1993. URL [file://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/emg93.ps.Z](http://www.tu-chemnitz.de/pub/Local/mathematik/Ruede/emg93.ps.Z). to appear in the Proceedings of the European Conference on Multigrid Meth-

ods, Amsterdam, July 6–9, P. Hemker and P. Wesseling eds.

**Rude:1993:FAM**

- [Rüd93f] Ulrich Rüde. Fully adaptive multigrid methods. *SIAM Journal on Numerical Analysis*, 30(1): 230–248, February 1993. CODEN SJNAAM. ISSN 0036-1429 (print), 1095-7170 (electronic).

**Ruede:1994:MAI**

- [Rüd94] U. Rüde. On the multilevel adaptive iterative method. *SIAM J. Sci. Stat. Comput.*, 15, 1994. CODEN SIJCD4. ISSN 0196-5204. also available as TU-Bericht I-9216, and published in the Preliminary Proceedings of the 2nd Copper Mountain Conference on Iterative Methods, April 9–14, 1992, ed. T. Manteuffel, University of Colorado at Denver.

**Ruede:2002:CEP**

- [Rue02] U. Ruede. Computational engineering programs at the University of Erlangen-Nuremberg. *Lecture Notes in Computer Science*, 2331:852–??, 2002. CODEN LNCSD9. ISSN 0302-9743 (print), 1611-3349 (electronic). URL <http://link.springer-ny.com/link/service/series/0558/bibs/2331/23310852.htm>; <http://link.springer-ny.com/link/service/series/0558/papers/2331/23310852.pdf>.

**Ruede:1986:TSM**

- [RZ86a] U. Rüde and C. Zenger. On the treatment of singularities in the multigrid method. In

W. Hackbusch and U. Trottenberg, editors, *Lecture Notes in Mathematics 1228: Multigrid Methods II, Proceedings of the Conference Held at Cologne, October 1-4, 1985*, pages ??–?? (of vi + 335). Springer-Verlag, Berlin, Germany / Heidelberg, Germany / London, UK / etc., 1986. ISBN 0-387-16491-X. LCCN QA3 .L35 v.1228. DM50.00.

**Ruede:1986:WMM**

- [RZ86b] U. Rüde and C. Zenger. A workbench for multigrid methods. Bericht I-8607, Institut für Informatik, TU München, May 1986.

**Ruede:1992:TSF**

- [RZ92] U. Rüde and C. Zenger. On the treatment of singularities in the finite element method. Bericht I-9220, Institut für Informatik, TU München, August 1992.

**Slavkovsky:1990:SBK**

- [SR90] P. Slavkovsky and U. Rüde. Schnellere Berechnung klassischer Matrix-Multiplikationen. SFB Bericht 342/17/90, Institut für Informatik, TU München, September 1990.

**Zenger:1988:BSE**

C. Zenger, R. Fößmeier, and U. Rüde. Betriebssystem- und Software-Engineering-Aspekte bei parallelen Algorithmen. *Kern-technik*, 52(2):120–125, 1988. CODEN KERNEU. ISSN 0004-7198, 0932-3902, 0368-5276.