

List of Publications

Jens Lorenz

August 2018

1. Lorenz, J., Melo, W., and Rocha, N.: The Magneto-Hydrodynamic Equations: Local Theory and Blow-up of Solutions. Accepted for publication in *Discrete and Continuous Dynamical Systems, Series B*. The journal is published by the American Institute of Mathematical Sciences.
2. Hagstrom, T., Lorenz, J., Zingano, J.P., and Zingano, P.R.: A New Inequality for Solutions of the Navier–Stokes Equations in \mathbb{R}^n . Submitted for publication in *Comptes Rendus Mathématique*, Jan. 17, 2018.
3. Lorenz, J., Melo, W., and S. de Souza: Regularity Criteria for Weak Solutions of the Magneto–Micropolar Equations. Submitted for publication in *Acta Mathematicae Applicatae Sinica*, May 25, 2017.
4. Hagstrom, T., Lorenz, J., Zingano, J.P., and Zingano, P.R.: An Inequality for Solutions of the Navier–Stokes Equations in \mathbb{R}^n . Submitted for publication in *Mathematical Fluid Mechanics* (in: March 2017).
5. Lorenz, J., Zingano, P.: Properties at Potential Blow–Up Times for the Incompressible Navier–Stokes Equations. *Boletim da Sociedade Paranaense de Matemática* 35(2), pp. 127–158 (2017).
6. Silva, P., Lorenz, J., Melo, W., and Zingano, P.: On the Large Time Approximation of the Navier–Stokes Equations in \mathbb{R}^n by Stokes Flows. *Methods and Applications of Analysis*, Vol. 23 (no. 4), December 2016, pp. 293-316
7. Lorenz, J., Melo, W.: On the Blow–Up Criterion of Periodic Solutions for Micropolar Equations in Homogeneous Sobolev Spaces. *Nonlinear Analysis Series B: Real World Applications*, pp. 93–106 (2016). Published online on Aug. 12, 2015.
8. Guba, O., Lorenz, J., and D. Sulsky: On Well–Posedness of the Viscous–Plastic Sea–Ice Model, *J. of Physical Oceanography*, Vol. 43 (10), pp. 2194–2209 (2013).
9. Lorenz, J.: *Deterministic and Random Evolution*, Nova Publishers, New York, 2013.
10. Lorenz, J., R. Ott: An Example of Self–Acceleration for Incompressible Flows, *Bol. Soc. Paran. Mat.*, Series 3, Vol. 31 (2), pp. 149–159 (2013).
11. Guba, O., Lorenz, J.: Continuous Spectra and Numerical Eigenvalues. *Math. Comp. Modelling*, **54**, (2011), pp. 2616-2622.
12. Qiu, Y., Lorenz, J.: A nonlinear Black–Scholes equation. *International Journal of Business Performance and Supply Chain Modelling*, **1**, No. 1, (2009), pp. 33-40.

13. Beyn, W.-J., Lorenz, J.: Nonlinear stability of rotating patterns. *Dynamics of Partial Differential Equations*, **5**, No. 4, (2008), pp. 349-400.
14. Edoh, K.D., Lorenz, J.: Modelling by a planar map: Lyapunov-type numbers in the presence of spiral points. *Math. Comp. Modelling*, **48**, No. 7-8, (2008), pp. 1068-1080.
15. Kreiss, G., Kreiss, H.-O., and Lorenz, J.: Stability of viscous shocks on finite intervals. *Archive for Rat. Mechanics and Analysis*, **187**, (2008), pp. 157-183.
16. Edoh, K.D., Lorenz, J.: Lyapunov-type numbers for Poincaré maps. *Boletim da Sociedade Paranaense de Matemática (BSPM)*, **24**, (2006), pp. 89-98.
17. Lorenz, J.: Review of the book *Numerical Solution of Partial Differential Equations* by K.W. Morton and D.F. Mayers. In: *SIAM Review* **48**, No. 4 (2006), pp. 807-808.
18. Nadiga, B., Taylor, M., and Lorenz, J.: Ocean modelling for climate studies: Eliminating short time-scales in long-term, high-resolution studies of ocean circulation. *Math. Comp. Modelling*, **44**, (2006), pp. 870-886.
19. Beyn, W.-J., Lorenz, J.: Stability of viscous profiles: Proofs via dichotomies. *Journal of Dynamics and Differential Equations* **18**, No. 1, pp. 141-195, 2006.
20. Kreiss, G., Kreiss, H.-O., and Lorenz, J.: Stability of viscous shocks on finite intervals. In: *Proceedings of the Tenth International Conference on Hyperbolic Problems: Theory, Numerics and Applications*. Asakura, editor. Yokohama Publishers Inc. (2006).
21. Goodrich, J., Hagstrom, T., and Lorenz, J.: Hermite methods for hyperbolic initial-boundary-value problems. *Math. Comp.* **75**, (2006), pp. 595-630.
22. Lorenz, J.: Review of the book *Difference Schemes with Operator Factors* by A.A. Samarskii, P.P. Matus, and P.N. Vabishchevich. In: *SIAM Review* **46**, No. 4 (2004), pp. 752-753.
23. Kreiss, H.-O., Lorenz, J.: A priori estimates in terms of the maximum norm for the solutions of the Navier-Stokes equations. *J. Diff. Equations*, Vol. **203** (2004), pp. 216-231.
24. Kreiss, H.-O., Lorenz, J.: Initial-boundary value problems and the Navier-Stokes equations. *Classics in Applied Mathematics* **47**, SIAM, 2004.
25. Edoh, K.D., Lorenz, J.: Numerical approximation of rough invariant curves of planar maps. *SIAM J. on Scientific Computing*, Vol. **25**, No. 1 (2003), pp. 213-223.

26. Kreiss, H.-O., Hagstrom, T., Lorenz, J., and Zingano, P.: Decay in time of incompressible flows. *J. math. fluid mech.* **5** (2003), pp. 231-244.
27. Hagstrom, T., Lorenz, J.: On the stability of approximate solutions of hyperbolic-parabolic systems and the all-time existence of smooth, slightly compressible flows. *Indiana University Math. J.* **51** No. 6 (2002), pp. 1339-1387.
28. Edoh, K.D., Lorenz, J.: A new algorithm for the computation of invariant curves using arc-length parametrization. In: Proceedings, International Conference on Computing and Information Technologies, World Scientific, 2001.
29. Edoh, K.D., Lorenz, J.: Computation of Lypunov-type numbers for invariant curves of planar maps. *SIAM J. Scientific Computing*, **23** No. 4 (2001), pp. 1113-1134.
30. Drumm, C.R., Fan, W.C., Lorence, L., Powell, J., and Lorenz, J.: Experience with unstructured-mesh electron transport code CEPTRE. In: Proceedings American Nuclear Society, Annual Meeting, 2000.
31. Drumm, C.R., Fan, W.C., and Lorenz, J.: Even/Odd parity transport with internal voids. In: Proceedings American Nuclear Society, Annual Meeting, 2000.
32. Kreiss, H.-O., Lorenz, J.: Resolvent Estimates and Quantification of Non-linear Stability. *Acta Mathematica Sinica*, English Series, Vol. **16**, No. 1 (2000), pp. 1-20.
33. Lorenz, J., Jackett, S., and Wangguo Qin: Self-organized criticality: Analysis and simulation of a 1D sandpile. In: *Numerical Methods for Bifurcation Problems and Large-Scale Dynamical Systems*, IMA Volumes in Mathematics and its Applications, Vol. 119. E. Doedel and L.S. Tuckerman (eds.), Springer Verlag, New York, 2000.
34. *Dynamics of Algorithms*, The IMA Volumes in Math. and Its Applications, Vol. 118, L. Petzold, R. de la Llave, J. Lorenz (eds.), Springer-Verlag, 2000.
35. Drumm, C.R., Lorenz, J.: FE solutions of the even/odd parity form of the linear Boltzmann equation. *Mathematical and Computer Modelling* **11**, No. 2-3 (2000), 55-71.
36. Drumm, C.R., Lorenz, J.: Parallel FE Electron-Photon Transport Analysis on a 2-D Unstructured Mesh. In: Mathematics and Computation, Reactor Physics and Environmental Analysis in Nuclear Applications, J.M. Aragonés (ed.), Senda Editorial, Spain, 1999.
37. Lorenz, J., Schroll, J.: Hyperbolic systems with relaxation: Characterization of stiff well-posedness and asymptotic expansion. *J. Mathematical Analysis and Applications* **235** (1999), 497-532.

38. Beyn, W.-J., Lorenz, J.: Stability of traveling waves: Dichotomies and eigenvalue conditions on finite intervals. *Numer. Funct. Anal. and Optimiz* **20**, No. 3& 4 (1999), 201-244.
39. Lorenz, J., Schroll, J.: Hyperbolic systems with relaxation: Symmetrizers and entropies. In: *Hyperbolic Problems: Theory, Numerics, Applications*. Fey, Jeltsch (eds.), pp. 823-832. ISNM Vol. 130, Birkhäuser, Basel, 1999.
40. Kreiss, G., Kreiss, H.-O., and Lorenz, J.: On stability of conservation laws. *SIAM J. Math. Analysis* **30**, No. 2 (1999), 401-430.
41. Qin, W., Lorenz, J.: *Self-Organized Criticality: Simulation Of A 1-D Sandpile Model*. In: *MHPCC Applications Briefs*, 1998.
<http://www.mhpcc.edu/research/ab98/98ab18.html>
42. Hagstrom, T., Lorenz, J.: All-time existence of classical solutions for slightly compressible flows. *SIAM J. Math. Analysis* **29**, No. 3 (1998), 652-672.
43. Lorenz, J., Schroll, J.: Well-posedness of stiff hyperbolic systems. In: M. Feistauer, K. Kizel, and R. Rannacher (eds.), *Matfyzpress, Prague. Numerical Modelling in Continuum Mechanics, Proceedings of the 3rd Summer Conference, Prague*, pp. 384-391, 1998.
44. Kreiss, H.-O., Lorenz, J.: Stability for time dependent differential equations. *Acta Numerica* **8** (1998), 203-285.
45. Lorenz, J., Schroll, J.: Stiff well-posedness and asymptotic expansion for hyperbolic systems with relaxation. Mittag-Leffler Report, 1997.
46. Lorenz, J., Schroll, J.: Stiff well-posedness for hyperbolic systems with large relaxation terms (linear constant-coefficient problems). *Adv. Differential Equations* **2** (1997), no. 4, 643-666.
47. Dieci, L., Lorenz, J.: Lyapunov-type numbers and torus breakdown: Numerical aspects and a case study. *Numer. Algorithms* **14** (1997), no.1-3, 79-102.
48. Baumert, A., Lorenz, J., and Hagstrom, T.: Boundary conditions at artificial boundaries for singular perturbations. IGPM-Report Nr. 118, RWTH-Aachen, Germany, 1995.
49. Dieci, L., Lorenz, J.: Computation of invariant tori by the method of characteristics. *SIAM J. Numer. Anal.* Vol. 32, No. 5, 1436-1474 (1995).
50. Hagstrom, T., Lorenz, J.: All-time existence of smooth solutions to PDEs of mixed type and the invariant subspace of uniform states. *Advances in Applied Mathematics* **16**, 219-257 (1995).
51. Lorenz, J., editor, *Mathl. Comput. Modelling*, Vol. 20, No. 10/11 (1994). Special Issue on Theory and Numerical Methods for Initial-Boundary Value Problems.

52. Lorenz, J.: Numerics of attractors and invariant manifolds. In: Chaotic Numerics (P. Kloeden, K. Palmer, eds.), AMS Series on Contemporary Mathematics 172 (1994), pp. 185 – 202.
53. Hagstrom, T., Lorenz, J.: Boundary conditions and the simulation of low Mach number flows. In: Environmental Acoustics, International Conference on Theoretical and Computational Acoustics, Vol. 2. D. Lee, M. H. Schultz (eds.), World Scientific, Singapore, 1994.
54. Kreiss, H.-O., Lorenz, J.: On the existence of slow manifolds for problems with different time scales. *Phil. Trans. R. Soc. Lond. A*, 346, 159-171 (1994).
55. Kloeden, P. E., Lorenz, J.: Lyapunov functions and the approximation of attractors. In: Nonlinear Dynamics: Attractor Approximation and Global Behaviour, pp. 93-98. N. Koks, V. Reitmann, T. Riedrich (Editors), Technische Universität Dresden, 1993.
56. Hagstrom, T., Lorenz, J.: Boundary conditions for models of slightly compressible flow. In: Applications of Advanced Computational Methods for Boundary and Interior Layers. J.J.H. Miller (editor), Boole Press, Dublin (1993).
57. Kreiss, H.-O., Lorenz, J.: Manifolds of slow solutions for highly oscillatory problems. *Indiana University Math. J.* 42, 1169-1191 (1993).
58. Lorenz, J.: Computation of invariant manifolds. In: Numerical Analysis 1991, pp. 118-127. D. F. Griffiths, G. A. Watson (editors), Longman Scientific & Technical, Harlow, Essex, UK, 1992.
59. Morlet, A. C., Lorenz, J.: Numerical solution of a functional equation on a circle. *SIAM J. Numer. Anal.* 29, 1741-1768 (1992).
60. Dieci, L., Lorenz, J.: Block M-matrices and computation of invariant tori. *SIAM J. Sci. Stat. Comput.* 13, 885-903 (1992).
61. Van de Velde, E., Lorenz, J.: Adaptive data distribution for concurrent continuation. *Numer. Math.* 62, 269-294 (1992).
62. Van de Velde, E., Lorenz, J.: Applications of adaptive data distributions. In: The Proceedings of the Fifth Distributed Memory Computing Conference, pp. 249-253. IEEE Computer Society, Los Alamitos (1991).
63. Dieci, L., Lorenz, J., Russell, R.: Numerical calculation of invariant tori. *SIAM J. Sci. Stat. Comput.* 12, 607-647 (1991).
64. Kreiss, H.-O., Lorenz, J., Naughton, M.: Convergence of the solutions of the compressible to the solutions of the incompressible Navier-Stokes equations. *Advances in Applied Mathematics* 12, 187-214 (1991).
65. Kloeden, P.E., Lorenz, J.: A note on multistep methods and attracting sets of dynamical systems. *Numer. Math.* 56, 667-673 (1990).

66. Lorenz, J., Van de Velde, E.: Concurrent computations of invariant manifolds. In: The Proceedings of the Fourth Conference on Hypercubes, Concurrent Computers, and Applications, pp. 1315-1320. Golden Gate Enterprises, Los Altos (1990).
67. Kreiss, H.-O., Lorenz, J.: Initial-boundary value problems and the Navier-Stokes equations. Vol. 136, Pure and Applied Mathematics, Academic Press, New York (1989).
68. Franklin, J., Lorenz, J.: On the scaling of multidimensional matrices. *Linear Algebra and Appl.* 114/115, 717-735 (1989).
69. Kloeden, P.E., Lorenz, J.: Lyapunov stability and attractors under discretization. In: *Differential Equations*, C. M. Dafermos, G. Ladas, G. Papanicolaou (eds). Marcel Dekker, New York (1989).
70. Dieci, L., Lorenz, J., Russell, R.: Decoupling of dynamical systems using boundary value techniques. Technical report, Applied Mathematics, Simon Fraser University (1988).
71. Beyn, W.-J., Lorenz, J.: Center manifolds of dynamical systems under discretization. *Numer. Funct. Anal. and Optimiz.* 9, 381-414 (1987).
72. Brown, D.L., Lorenz, J.: A high-order method for stiff boundary-value problems with turning points. *SIAM J. Sci. Stat. Comput.* 8, 790-805 (1987).
73. Lorenz, J., Sanders, R.: On the rate of convergence of viscosity solutions for boundary value problems. *SIAM J. Math. Anal.* 18, 306-320 (1987).
74. Kloeden, P.E., Lorenz, J.: Stable attracting sets in dynamical systems and in their one step discretizations. *SIAM J. Numer. Anal.* 23, 986-995 (1986).
75. Lorenz, J.: Convergence of upwind schemes for a stationary shock. *Math. Comp.* 46, 45-57 (1986).
76. Lorenz, J., Sanders, R.: Second order nonlinear singular perturbation problems with boundary conditions of mixed type. *SIAM J. Math. Anal.* 17, 580-594 (1986).
77. Lorenz, J.: Analysis of difference schemes for a stationary shock. *SIAM J. Numer. Anal.* 21, 1038-1053 (1984).
78. Lorenz, J.: Study of a numerical method of a shock problem. *ZAMM* 64, T298-T299 (1984).
79. Lorenz, J.: Numerical solution of a singular perturbation problem with turning points. In: *Equadiff 82*, H.W. Knobloch, K. Schmitt (eds.), *Lecture Notes in Math.* 1017, Springer (1983).

80. Lorenz, J.: Stability and monotonicity properties of stiff quasi-linear boundary problems. Review of Research, Faculty of Science, Math. Series 12, University Novi Sad, 151-175 (1982).
81. Lorenz, J.: Iterative solution of nonlinear difference equations for shock problems. In: Introduction to Computational and Asymptotic Methods for Boundary and Interior Layers. Miller (ed.), Boole Press Limited, Dublin (1982).
82. Lorenz, J.: Discretization of conservation laws and numerical dissipation. In: Introduction to Computational and Asymptotic Methods for Boundary and Interior Layers. Miller (ed.), Boole Press Limited, Dublin (1982).
83. Lorenz, J.: An elementary introduction to and analytical properties of some shock problems. In: Introduction to Computational and Asymptotic Methods for Boundary and Interior Layers. Miller (ed.), Boole Press Limited, Dublin (1982).
84. Lorenz, J.: Nonlinear boundary value problems with turning points and properties of difference schemes. In: de Jager, Eckhaus (eds.), Theory and Applications of Singular Perturbations, 150-169. Lecture Notes in Math. 942, Springer (1982).
85. Beyn, W.-J., Lorenz, J.: Spurious solutions for discrete superlinear boundary value problems. Computing 28, 43-51 (1982).
86. Lorenz, J.: Nonlinear singular perturbation problems and the Engquist-Osher difference scheme. Mathematisch Institut, Katholieke Universiteit Nijmegen, Report 8115 (1981).
87. Lorenz, J.: Resonance in equations with a diagonal field. Linear Algebra and Appl. 38, 103-107 (1981).
88. Lorenz, J.: Exponentially fitted difference schemes for singular perturbation problems. ZAMM 61, T293-T294 (1981).
89. Lorenz, J.: Stability and consistency analysis of difference methods for singular perturbation problems. In: Axelsson, Frank, van der Sluis (eds.), Analytical and Numerical Approaches to Asymptotic Problems in Analysis, 141-156. North-Holland, Amsterdam (1981).
90. Lorenz, J.: Zur Theorie und Numerik von Differenzenverfahren für singuläre Störungen. Habilitationsschrift, Universität Konstanz (1980).
91. Bohl, E., Lorenz, J.: Inverse monotonicity and difference schemes of higher order. A summary for two-point boundary value problems. Aequ. Math. 19, 1-36 (1979).
92. Lorenz, J., Mackens, W.: Toeplitz matrices with totally nonnegative inverses. Linear Algebra and Appl. 24, 133-141 (1979).

93. Lorenz, J.: Zur numerischen Lösung steifer Randwertaufgaben. *ZAMM* **59** (1979), pp. T65-T66.
94. Lorenz, J.: Combinations of initial and boundary value methods for a class of singular perturbation problems. In: Hemker, Miller (eds.), *Numerical Analysis of Singular Perturbation Problems*, 295-315. Academic Press, London, New York, San Francisco (1979).
95. Griffiths, D.F., Lorenz, J.: An analysis of the Petrov-Galerkin finite element method. *Comput. Methods Appl. Mech. Engrg.* **14** (1978), pp. 39-64.
96. Lorenz, J.: Die Konvergenzordnung bei Diskretisierungen mit Formeln höherer Genauigkeit. *ZAMM* **57** (1977), pp. T288-T289.
97. Lorenz, J.: Zur Inversmonotonie diskreter Probleme. *Numer. Math.* **27** (1977), pp. 227-238.
98. Beyn, W.-J., Lorenz, J.: On convergence of finite element methods for non-coercive problems. Department of Math. and Statistics, Calgary, Research paper 330 (1976).
99. Lorenz, J.: Die Inversmonotonie von Matrizen und ihre Anwendung beim Stabilitätsnachweis von Differenzenverfahren. Dissertation, Universität Münster (1975).
100. Bohl, E., Beyn, W.-J., Lorenz, J.: Zur Anwendung der Theorie über den Spektralradius linearer, streng-monotoner Operatoren. ISNM 24, Birkhäuserverlag, Basel, Stuttgart, 23-31 (1974).