

## ALINA CHERTOCK - CURRICULUM VITAE

### AFFILIATION

Department of Mathematics, **North Carolina State University**

Address: Department of Mathematics, NCSU  
Campus Box 8205  
Raleigh, NC 27695  
USA  
Phone: 1-919-515-3200  
Fax: 1-919-515-0657  
E-mail: [chertock@math.ncsu.edu](mailto:chertock@math.ncsu.edu)  
URL: <https://chertock.wordpress.ncsu.edu>

### EDUCATION

1991–1999 **Ph.D., Applied Mathematics**, School of Mathematical Sciences, Tel-Aviv University, Israel  
1984–1989 **M.Sc.** (Diploma of Higher Education), **Applied Mathematics**, Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University, Moscow, U.S.S.R

### RESEARCH INTERESTS

Applied Nonlinear Partial Differential Equations, Scientific Computing, Numerical Analysis, Multiscale Models, Uncertain Phenomena, Experimental Asymptotics.

### ACADEMIC EMPLOYMENT

2017–present **Associate Director**, Center for Research in Scientific Computation, North Carolina State University  
2015–present **Department Head**, Department of Mathematics, North Carolina State University  
Summer 2016 **Simons Visiting Professor**, Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany  
Summer 2014 **Visiting Professor**, Institute of Mathematics, University of Mainz, Germany  
2013–present **Professor**, Department of Mathematics, North Carolina State University  
2012–present **Adjunct Professor**, Moscow Institute of Physics and Technology, Moscow, Russia  
Summer 2012 **Visiting Professor**, Department of Mathematics, Jiao Tong University, Shanghai, China

- 2010–2011 **Visiting Professor**, Institut de Mathématiques de Toulouse, Université Paul Sabatier, Toulouse, France
- 2007–2013 **Associate Professor**, Department of Mathematics, North Carolina State University
- 2007–2009 **Visiting Associate Professor**, Division of Applied Mathematics, Brown University
- 2002–2007 **Assistant Professor**, Department of Mathematics, North Carolina State University
- 2001–2002 **Visiting Assistant Professor**, Department of Mathematics, University of California, Berkeley
- 1999–2001 **Postdoctoral Fellow**, Department of Mathematics, University of California, Berkeley  
**Postdoctoral Fellow**, Department of Mathematics, Lawrence Berkeley National Laboratory, Berkeley
- 1996–1999 **Instructor**, School of Mathematical Sciences, Tel-Aviv University, Israel  
**Instructor**, The Academic College of Tel-Aviv-Yaffo, Tel-Aviv, Israel
- 1991–1996 **Teaching Assistant**, School of Mathematical Sciences, Tel-Aviv University, Israel

#### AWARDS AND GRANTS

- 2018–2021 **NSF Research Grant DMS-1818684**: “*Structure Preserving Numerical Methods for Hyperbolic Balance Laws with Applications to Shallow Water and Atmospheric Models*”, PI, NCSU
- 2015–2018 **NSF Research Grant DMS-1521051**: “*Numerical Methods for Partial Differential Equations Arising in Shallow Water Modeling*”, PI, NCSU
- 2014 **ONR Conference Grant N00014-14-1-0308**: *Modern Perspectives in Applied Mathematics: Theory and Numerics of PDEs*, PI, NCSU
- 2012, 2013 **Research Award**, College of Sciences, NCSU
- 2012–2016 **NSF Research Grant DMS-1216974**: “*Numerical Methods for Shallow Water Equations and Related Models*”, PI, NCSU
- 2012–2015 **ONR Research Grant N00014-12-1-0832**: “*Numerical Methods for Shallow Water Equations and Related Models*”, PI, NCSU
- 2012–2018 **NSF Research Network in Mathematical Sciences RNMS-11-07444**: “**Kinetic Description of Emerging Challenges in Multiscale Problems of Natural Sciences**”, leading the NCSU node
- 2011–2015 **NSF Research Grant DMS-1115682**: “*Development of High-Resolution Finite-Volume Methods for Systems of Nonlinear Time-Dependent PDEs*”, PI, NCSU
- 2007–2011 **NSF Research Grant DMS-0712898**: “*Innovative Numerical Methods for Nonlinear Time-Dependent PDEs*”, PI, NCSU

- 2007        **SIAM Travel Award** to attend the International Congress of Industrial and Applied Mathematics, Zürich, Switzerland
- 2006        **AMS Travel Award** to attend the International Congress of Mathematicians, Madrid, Spain
- 2004        **Association for Women in Mathematics – National Science Foundation (AWM-NSF) Travel Grant**
- 2004–2008    **NSF Research Grant DMS-0410023:** “*Particle Methods for Nonlinear Time-Dependent PDEs*”, PI, NCSU
- 2003–2004    **Faculty Research and Professional Development Award**, NCSU
- 2002        **American Mathematical Society Travel Award** to attend the International Congress of Mathematicians, Beijing, China
- 1998        **The Ami Harten Award** for Excellence in Applied Mathematics Graduate Studies, Tel-Aviv University, Israel
- 1997        **The Nathan and Ruth El Josef Award** for Teaching Excellence, Tel-Aviv University, Israel
- 1993–1996    **The Josef Buchmann Doctoral Scholarship Fund** in Mathematics and Computer Sciences, Israel

## PROFESSIONAL ACTIVITIES

- *Professional Service on Campus:*

- Member of the Faculty Advisory Committee (FAC), Department of Mathematics, NCSU, 2007–2009, 2012–2014.
- Member of the Hiring Committee, Department of Mathematics, NCSU, every year since 2005.
- Chair of the Hiring Committee, Department of Mathematics, NCSU, 2013–2014.
- Member of the Graduate Program Committee, Department of Mathematics, NCSU, 2009–2012, 2015–2016.
- Member of the Graduate Recruitment Committee, Department of Mathematics, NCSU, 2009–2012, 2015–2016.
- Member of the Undergraduate Course & Curriculum Committee, Department of Mathematics, NCSU, 2010–2012, 2015–2016.
- Member of PhD Prelim Committees, NCSU, 2005–2016.
- Member of the Math Distinguished Lecture Series, Department of Mathematics, NCSU, 2014–2016.
- Mentor of Teaching Assistants, Department of Mathematics, NCSU.
- Member of the Center for Research in Scientific Computing, NCSU, 2002–present.

- Organizer of the Numerical Analysis Seminar, Department of Mathematics, NCSU, 2003–2005.
- *Professional Service off Campus:*
  - Referee for scientific journals: Applicable Analysis, Applied Numerical Mathematics, Computers and Fluids, Journal of Computational and Applied Mathematics, International Journal of Heat and Mass Transfer, IMA Journal of Numerical Analysis, Journal of Computational Physics, Journal of Differential Equations, Journal of Mathematical Analysis and Applications, Journal of Scientific Computing, Journal of Statistical Physics, Mathematical Modelling and Numerical Analysis (M2AN), Mathematics and Computers in Simulation, Molecular Biology and Evolution, Mathematics of Computation, Numerische Mathematik, Physica Letter A, Proceedings of National Academy of Sciences (PNAS), Studies in Applied Mathematics, SIAM Journal of Numerical Analysis, SIAM Journal of Scientific Computing, Theoretical and Computational Fluid Dynamics.
  - Reviewer for the Department of Energy, Air Force Office of Scientific Research, United States-Israel Binational Science Foundation, French Institute for Research in Computer Science and Automation (INRIA).
  - Panelist on a number of mathematical and interdisciplinary NSF panels.
  - Member of an international evaluation committee for the French Institute for Research in Computer Science and Automation (INRIA).
  - Member of the scientific committee of the research team AGNE (Numerical Analysis, Geophysics and Ecology), French Institute for Research in Computer Science and Automation (INRIA).
- *Editorial responsibilities:*
  - SIAM Journal on Applied Mathematics (Associate Editor, 2017–present), Journal of Scientific Computing (Guest Editor), Communications in Computational Physics (Guest Editor).
- *Professional Societies:*
  - Society of Industrial and Applied Mathematics (SIAM), SIAM Applied PDE activity group, SIAM Nonlinear Waves and Coherent Structures activity group, SIAM Geosciences activity group, Association for Women in Mathematics (AWM).
  - Secretary of the SIAM Applied PDE activity group.

## MENTORING ACTIVITIES

- *Current PhD Students*
  - Andrew Bernstein, Department of Mathematics, NCSU, 2013–present.
  - Hengrui Hu, Department of Mathematics, NCSU, 2014–present.
  - Karlan Wolfkill, Department of Mathematics, NCSU, 2015–present.

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- Jun Yan, Department of Mathematics, NCSU, 2015–present.
  - *Former PhD Students*
    - Seyma Nur Oszan, Department of Mathematics, NCSU, 2013–2017.
    - Terrance Pendleton, Department of Mathematics, NCSU, 2009–2013.
    - Sean Cohen, Department of Mathematics, NCSU, 2008–2011.
  - *Visiting PhD Students*
    - Jochen Neusser, Institute for Applied Analysis and Numerical Simulation, Stuttgart University, Fall 2014.
    - Bettina Wiebe, Department of Mathematics, University of Mainz, Spring 2018.
  - *Postdoctoral Fellows*
    - Daniel Balagué, Department of Mathematics, NCSU, 2013–2015.
    - Tong Wu, Department of Mathematics, NCSU, 2016–2018.
  - *PhD Committees at NCSU*
    - Daniel Reich, Department of Mathematics, 2018–present.
    - Deena Hannoun, Department of Mathematics, 2016–2017.
    - Melissa Strait, Department of Mathematics, 2014–2017.
    - Alper Altuntas, Department of Civil, Construction, and Environmental Engineering Department, 2014–2016.
    - Elisabeth Brown, Department of Mathematics, 2015–2016.
    - Darrell Britt, Department of Mathematics, 2014–2015.
    - Anne Costolanski, Department of Mathematics, 2012–2013.
    - Elgaddafi Elamami, Department of Mathematics, 2012–2013.
    - Guanyu Chen, Department of Mathematics, 2012–2013.
    - Sidong Max Zhang, Department of Mathematics, 2011–2013.
    - Shijun Yin, Department of Mathematics, 2011–2012.
    - Min-Hsiung Lin, Department of Mathematics, 2009–2010.
    - Cary Humber, Department of Mathematics, 2009–2010.
    - Ellen Peterson, Department of Mathematics, 2009–2010.
    - Nicholas Giffen, Department of Mathematics, 2010.
    - Jeb Collins, Department of Mathematics, 2010.
    - Kristen DeVault, Department of Mathematics, 2007–2008.

- Stacey Ernstberger, Department of Mathematics, 2006–2007.
- Arthur W. Peterson, Department of Mathematics, 2005–2006.
- Wang Qiqi, Department of Textile & Apparel Technology & Management, 2005-2006.
- Edward L. Row, Department of Mathematics, 2005.
- Shufen Cao, Department of Mechanical and Aerospace Engineering, 2005.
- Rachel Levy, Department of Mathematics, 2004–2005.
- Sid Becker, Department of Mechanical Engineering, 2003-2004.
  
- *MSc Committees at NCSU*
  - William Oakley, Department of Mathematics, 2014.
  - William Lee, Department of Mechanical Engineering, 2008.
  - Chris Brasfield, Department of Mathematics, 2008.
  
- *PhD Committees at Other Institutions*
  - Luca Arpaia, Department of Mathematics, University of Bordeaux, 2017.
  - Yuanzhen Chen, Department of Mathematics, Tulane University, 2015-2016.
  - Aziz Beljadid, Department of Civil Engineering, Ottawa University, 2015.
  - Zhuolin Qu, Department of Mathematics, Tulane University, 2015-2016.
  - Yu Liu, Department of Mathematics, Tulane University, 2010-2012.
  - Michael Polack, Department of Mathematics, Tulane University, 2010-2011.

## SPECIAL PROJECTS WITH STUDENTS

- Mentor for the Research Experience for Early Graduate Students (REG) program, Department of Mathematics, NCSU, 2011–2012, 2012–2013, and 2013–2014.
- Mentor for the Preparing the Professoriate (PTP) program, Department of Mathematics, NCSU, 2010–2011, 2012–2013, and 2014–2015.
- Program on Stochastic Dynamics, Statistical and Applied Mathematical Sciences Institute (SAMSI), 2009–2010.
- Research Industrial Projects for Students (RIPS), Institute of Pure and Applied Mathematics (IPAM), University of California, Los Angeles, July-August, 2003.
- Industrial Mathematical and Statistical Modeling Workshop for Graduate Students, Department of Mathematics and Center for Research in Scientific Computation, NCSU, July 25–August 2, 2005.
- Industrial Mathematical and Statistical Modeling Workshop for Graduate Students, Department of Mathematics and Center for Research in Scientific Computation, NCSU, July 24–August 1, 2006.

**CONFERENCES: ORGANIZER**

1. SIAM Southeastern Atlantic Section (SIAM-SEAS) Conference, Chapel Hill, NC, March 9–11, 2018.
2. International Conference on Numerical Methods for Shallow Water Equations and Related Models, Southern University of Science and Technology (SUSTech), Shenzhen, China, December 2–4, 2017.
3. Conference on Selected Topics in Transport Phenomena: Deterministic and Probabilistic Aspects, Center for Scientific Computation and Mathematical Modeling (CSCAMM), University of Maryland, April 18–22, 2017.
4. Young Researchers Workshop: Stochastic and Deterministic Methods in Kinetic Theory, Duke University, November 28–December 2, 2016.
5. Minisymposium on Uncertainty Quantification for Hyperbolic and Kinetic Equations, SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, December 7–10, 2015.
6. Conference on Collective Dynamics in Biological and Social Systems, Duke University, November 19–22, 2015.
7. Minisymposium on Numerical Analysis, First Joint International Meeting of the Israel Mathematical Union and the Mexican Mathematical Society, Oaxaca, Mexico, September 7–11, 2015.
8. Minisymposium on Recent Developments in Modeling and Numerical Simulations of Geophysical Flows, the 8th International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, August 10–14, 2015.
9. Conference on Asymptotic Preserving and Multiscale Methods for Kinetic and Hyperbolic Problems, University of Wisconsin, Madison, May 4–8, 2015.
10. Minisymposium on Mathematical Methods in Biological Systems, The 5th International Conference on Scientific Computing and Partial Differential Equations, Hong Kong, 8–12 December, 2014.
11. SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge, Cambridge, UK, August 11–14, 2014.
12. Conference on Collective Behavior: Macroscopic Versus Kinetic Descriptions, Imperial College, London, UK, May 19–23, 2014.
13. Conference on Modern Perspectives in Applied Mathematics: Theory and Numerics of PDEs, Washington, DC, April 28–May 2, 2014.
14. Workshop on Asymptotic-Preserving Methods for Kinetic Equations, North Carolina State University, NC, February 3–6, 2014.
15. Minisymposium on Asymptotically Preserving Numerical Methods for Time-Dependent PDEs, SIAM Conference on Analysis of PDEs, Orlando, FL, December 7–10, 2013.
16. Member of the International Advisory Committee of 29th International Symposium on Shock Waves, University of Wisconsin-Madison, July 14–19, 2013.

17. Conference on Transport Models for Collective Dynamics in Biological Systems, North Carolina State University, January 15–19, 2013.
18. Minisymposium on Numerical Methods for Shallow Water Equations and Related Models, the 7th International Congress on Industrial and Applied Mathematics (ICIAM), Vancouver, Canada, July 18–22, 2011.
19. Member of the Scientific Committee of 28th International Symposium on Shock Waves, University of Manchester, UK, July 17–22, 2011.
20. Workshop on Pedestrian Traffic Flows, Statistical and Applied Mathematical Sciences Institute (SAMSI), February 14–16, 2011.
21. Special Session in memory of Prof. David Gottlieb, the 8th International Conference on Spectral and High-Order Methods, Trondheim, Norway, June 22–26, 2009.
22. Minisymposium on Numerical Solution of PDEs and Applications, AMS Southeastern Regional Meeting, Raleigh, NC, April 4–5, 2009.
23. Minisymposium on Numerical Methods for Multicomponent Flows, ICIAM, Zürich, July 16–20, 2007.
24. Minisymposium on Numerical Methods for Multicomponent Flows, The 2nd International Conference on Scientific Computing and Partial Differential Equations & The First East Asia SIAM Symposium, Hong Kong, December 12–16, 2005.
25. Minisymposium on Computational Aspects of Transport Phenomena, SIAM Annual Meeting, New Orleans, July 11–15, 2005.

#### **CONFERENCE, COLLOQUIUM AND SEMINAR TALKS (since 2013)**

1. International Conference on Spectral and High Order Methods, Imperial College, London, UK, July 9-13, 2018 (invited).
2. XVII International Conference on Hyperbolic Problems Theory, Numerics, Applications, University Park, PA, June 25-29, 2018 (plenary).
3. Workshop on Multi-Scale Geometric Numerical Methods, The Henri Lebesgue Center, Rennes, France, June 12-15, 2018 (invited).
4. Conference on Numerical Aspects of Hyperbolic Balance Laws and Related Problems, University of Ferrara, Italy, April 18-20, 2018 (invited).
5. Department of Mathematics, Imperial College, London, March 2018 (invited).
6. International Conference on Numerical Methods for Shallow Water Equations and Related Models, Southern University of Science and Technology (SUSTech), Shenzhen, China, December 2–4, 2017 (invited).
7. Workshop on Pedestrian Dynamics: Modeling, Validation and Calibration, Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, August 23–25, 2017 (invited).
8. Department of Mathematics, South University of Science and Technology of China, July 2017 (invited).



9. International Conference on Numerical Simulation for Multimaterial and Multiphysics Flows, Beijing, China, July 3–7, 2017 (invited).
10. Department of Mathematics, University of Mainz, Germany, June 2017 (invited).
11. Conference on Finite Volumes for Complex Applications VIII, Lille, France, June 12–16, 2017 (plenary).
12. Conference Numerical Methods for Hyperbolic Problems, Monte Verita, Switzerland, May 28–June 2, 2017 (invited).
13. Department of Mathematics, Huazhong University of Science and Technology, China, April 2017 (invited).
14. Department of Mathematics, Wuhan University, China, April 2017 (invited).
15. Conference on Selected Topics in Transport Phenomena: Deterministic and Probabilistic Aspects, Center for Scientific Computation and Mathematical Modeling (CSCAMM), University of Maryland, April 18–22, 2017 (invited).
16. AMS Sectional Meetings, College of Charleston, Charleston, March 10–12, 2017 (plenary).
17. SIAM Conference on Computational Science and Engineering, Atlanta, GA, February 28–March 3, 2017 (invited).
18. Department of Mathematics, South University of Science and Technology of China, February 2017 (invited).
19. Department of Mathematics, University of Wisconsin, Madison, February 2017 (invited).
20. Conference on Transport Phenomena in Collective Dynamics: From Micro to Social Hydrodynamics, ETH-Zürich. November 1–4, 2016 (invited).
21. Workshop on New Trends in Quantum and Classical Kinetic Equations and Related PDEs, University of Wisconsin, Madison, October 6–8, 2016 (invited).
22. SIAM Conference on Mathematics of Planet Earth, Philadelphia, PA, September 30–October 2, 2016 (invited).
23. Mathematics Department, Tulane University, New Orleans, LA, September 2016 (invited).
24. XVI International Conference on Hyperbolic Problems Theory, Numerics, Applications, Aachen, Germany, August 1–5, 2016 (invited).
25. Workshop on Hyperbolic Techniques in Modelling, Analysis and Numerics, Oberwolfach Research Institute for Mathematics, Germany, June 19–25, 2016 (invited).
26. Institute of Applied Analysis and Numerical Simulation, University of Stuttgart, Germany, June 2016 (invited).
27. Department of Civil Engineering, University of Ottawa, Canada, May 2016 (invited).
28. School of Mathematical Sciences, Tel-Aviv University University, Israel, May 2016 (invited).
29. School of Mathematical Sciences, Nanjing Normal University, China, March 2016 (invited).
30. Department of Mathematics, Imperial College, London, February 2016 (invited).

31. SIAM Conference on Analysis of Partial Differential Equations, Scottsdale, AZ, December 7–10, 2015 (invited).
32. Conference “Women in Applied Maths & Soft Matter Physics”, Mainz, Germany, October 26–28, 2015 (invited).
33. Workshop on Mathematical Foundations of Traffic, Institute for Pure & Applied Mathematics, UCLA, September 28–October 2, 2015.
34. First Joint International Meeting of the Israel Mathematical Union and the Mexican Mathematical Society, Oaxaca, Mexico, September 7–11, 2015 (invited).
35. Workshop on Multiscale Numerical Methods for Differential Equations, Lebesgue Center of Mathematics, Rennes, France, August 25–27, 2015 (invited).
36. The 8th International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, August 10–14, 2015 (invited).
37. Workshop and Summer School on Kinetic Theory and Gas Dynamics, Shanghai, China, August 4–7, 2015 (invited).
38. Numerical Approximations of Hyperbolic Systems with Source Terms and Applications, Cortona, Italy, June 12–20, 2015.
39. Conference on Asymptotic Preserving and Multiscale Methods for Kinetic and Hyperbolic Problems, University of Wisconsin, Madison, May 4–8, 2015 (invited).
40. AMS Spring Western Sectional Meeting, University of Nevada, Las Vegas, April 18–19, 2015 (invited).
41. Department of Mathematics, George Washington University, February 2015 (invited).
42. Department of Civil Engineering, University of Ottawa, Canada, February 2015 (invited).
43. Department of Mathematics, Purdue University, January 2015 (invited).
44. The 9th International Conference on Computational Physics, Singapore, 7–11 January, 2015 (invited).
45. The 5th International Conference on Scientific Computing and Partial Differential Equations, Hong Kong, 8–12 December, 2014 (invited).
46. Department of Mathematics, University of Wisconsin, Madison, November 2014 (invited).
47. SIAM Conference on Nonlinear Waves and Coherent Structures, University of Cambridge, Cambridge, UK, August 11–14, 2014 (invited).
48. The 15th International Conference on “Hyperbolic Problems: Theory, Numerics and Applications” (HYP2015), Rio de Janeiro, Brazil, July 28–August 1, 2014.
49. Department of Mathematics, University of Mainz, Germany, July 2014 (invited).
50. Second Joint International Meeting of the Israeli Mathematical Union (IMU) and the American Mathematical Society (AMS), Tel-Aviv, Israel, June 16–19, 2014 (invited).
51. The 18th European Conference on Mathematics for Industry, Taormina, Italy, June 9–13, 2014 (invited).

52. Department of Mathematics, University of California, Irvine, April 2014 (invited).
53. SIAM Conference on Analysis of PDEs, Orlando, FL, December 7–10, 2013 (invited).
54. Center for Scientific Computation and Mathematical Modeling (CSCAMM), University of Maryland, November 2013 (invited).
55. AMS Fall Eastern Sectional Meeting, Philadelphia, PA, October 12–13, 2013 (invited).
56. Numerical Approximations of Hyperbolic Systems with Source Terms and Applications, Aachen, Germany, September 23–27, 2013.
57. SIAM Conference on Mathematical and Computational Issues in the Geosciences, Padua, Italy, June 17–20, 2013.
58. International Conference on Difference Schemes and Applications, Moscow, Russia, May 27–30, 2013 (invited).
59. Laboratory for Mathematical Modeling of Nonlinear Processes in Gas Media, Moscow Institute of Physics and Technology, Russia, May 2013 (invited).
60. Fourth Congress on Industrial, Computational and Applied Mathematics, Buenos Aires, Argentina, May 15–17, 2013.
61. Department of Mathematics, Imperial College, London, April 2013 (invited).
62. European Workshop on High Order Nonlinear Numerical Methods for Evolutionary PDEs, Bordeaux, France, March 18–22, 2013.
63. Clifford Lectures on Numerical Methods for Convection Dominated Partial Differential Equations, Tulane University, New Orleans, LA, March 13–16, 2013 (invited).
64. Conference on Kinetic Theory for the Emergence of Complex Behavior in Social and Economic Systems, Tempe, AZ, February 22–24, 2013 (invited).
65. Department of Mathematics, University of Houston, January 2013 (invited).
66. Department of Mathematics, Texas A&M University, January 2013 (invited).

## LIST OF PUBLICATIONS

All papers can be downloaded from <https://chertock.wordpress.ncsu.edu>

1. A. Chertock, Y. Karamzin, V. Trofimov, *On a numerical algorithm for nonlinear differential equations describing some processes in photoreceivers*, Journal of Mathematical Modeling, **3** (1991), pp. 95–103 (in Russian).
2. S. Abarbanel, A. Chertock, *Strict stability of high-order compact implicit finite-difference schemes - the role of boundary conditions for hyperbolic PDEs. Part I*, Journal of Computational Physics, **160** (2000), pp. 42–66.
3. S. Abarbanel, A. Chertock, A. Yefet, *Strict stability of high-order compact implicit finite-difference schemes - the role of boundary conditions for hyperbolic PDEs. Part II*, Journal of Computational Physics, **160** (2000), pp. 67–87.

4. G. I. Barenblatt, M. Bertsch, A. E. Chertock, V. M. Prostokishin, *Self-similar intermediate asymptotics for a degenerate parabolic filtration-absorption equation*, Proceedings of National Academy of Sciences, **97** (2000), pp. 9844–9848.
5. A. Chertock, D. Levy, *Particle methods for dispersive equations*, Journal of Computational Physics, **171** (2001), pp. 708–730.
6. A. Chertock, *On the stability of a class of self-similar solutions to the filtration-absorption equation*, European Journal of Applied Mathematics, **13** (2002), pp. 179–194.
7. A. Chertock, D. Levy, *Particle methods for the KdV equation*, Journal of Scientific Computing, **17** (2002), pp. 491–499.
8. A. Chertock, A. Kurganov, P. Rosenau, *Formation of discontinuities in flux-saturated degenerate parabolic equations*, Nonlinearity, **16** (2003), pp. 1875–1898.
9. A. Chertock, A. Kurganov, *On a hybrid finite-volume particle method*, Mathematical Modelling and Numerical Analysis, **38** (2004), pp. 1071–1091.
10. A. Chertock, D. Levy, *On wavelet-based numerical homogenization*, SIAM Journal of Multi-scale Modeling & Simulation, **3** (2004), pp. 65–88.
11. A. Chertock, A. Kurganov, *Conservative locally moving mesh method for multifluid flows*, Finite Volumes for Complex Applications IV (2005), pp. 273–284.
12. A. Chertock, A. Kurganov, G. Petrova, *Fast explicit operator splitting method. Application to the polymer system*, Finite Volumes for Complex Applications IV (2005), pp. 63–72.
13. A. Chertock, A. Kurganov, P. Rosenau, *On strongly degenerate saturated-diffusion equations with convection*, Nonlinearity, **18** (2005), pp. 609–630.
14. A. Chertock, A. Kurganov, G. Petrova, *Finite-volume-particle methods for models of transport of pollutant in shallow water*, Journal of Scientific Computing, **27** (2006), pp. 189–199.
15. A. Chertock, A. Kurganov, *On a practical implementation of particle methods*, Applied Numerical Analysis, **56** (2006), pp. 1418–1431.
16. A. Chertock, A. Kurganov, Yu. Rykov, *A new sticky particle method for pressureless gas dynamics*, SIAM Journal on Numerical Analysis, **45** (2007), pp. 2408–2441.
17. A. Chertock, E. Kashdan, A. Kurganov, *Propagation of diffusing pollutant by a hybrid Eulerian-Lagrangian method*, Hyperbolic Problems: Theory, Numerics, Applications (Lyon 2006), pp. 371–380, Springer, 2008.
18. A. Chertock, A. Kurganov, *A simple Eulerian finite-volume method for compressible fluids in domains with moving boundaries*, Communications in Mathematical Sciences, **6** (2008), pp. 531–556.
19. A. Chertock, D. Gottlieb, A. Solomonoff, *Modified optimal prediction and its application to a particle-method problem*, Journal of Scientific Computing, **37** (2008), pp. 189–201.
20. A. Chertock, S. Karni, A. Kurganov, *Interface tracking method for compressible multifluids*, M2AN Mathematical Modelling and Numerical Analysis, **42** (2008), pp. 991–1019.
21. A. Chertock, A. Kurganov, *A positivity preserving central-upwind scheme for chemotaxis and haptotaxis models*, Numerische Mathematik, **111** (2008), pp. 169–205.

22. A. Chertock, A. Kurganov, *Computing multivalued solutions of pressureless gas dynamics by deterministic particle methods*, Communications in Computational Physics, **5** (2009), pp. 565–581.
23. A. Chertock, A. Kurganov, G. Petrova, *Fast explicit operator splitting method for convection-diffusion equations*, International Journal for Numerical Methods in Fluids, **59** (2009), pp. 309–332.
24. A. Chertock and A. Kurganov, *On splitting-based numerical methods for convection-diffusion equations*, in Numerical Methods for Balance Laws, Quaderni di Matematica, Aracne editrice S.r.l., Roma, **24** (2010), p. 303.
25. A. Chertock, C. Doering, E. Kashdan and A. Kurganov, *A fast explicit operator splitting method for passive scalar advection*, Journal of Scientific Computing, **45** (2010), pp. 200–214.
26. A. Chertock, C. I. Christov and A. Kurganov, *Central-upwind schemes for the Boussinesq paradigm equations*, in Computational Science and High Performance Computing IV, The 4th Russian-German Advanced Research Workshop, Freiburg, Germany, vol. 115 of Notes on Numerical Fluid Mechanics and Multidisciplinary Design, Springer, 2011, pp. 267–281.
27. A. Chertock, P. Du Toit and J. E. Marsden, *Integration of the EPDiff equation by particle methods*, M2AN Mathematical Modelling and Numerical Analysis, **46** (2012), pp. 515–534.
28. A. Chertock, A. Kurganov, X. Wang and Y. Wu, *On a chemotaxis model with saturated chemotactic flux*, Kinetic and Related Models, **5** (2012), pp. 51–95.
29. A. Chertock, J.-G. Liu and T. Pendleton, *Convergence analysis of the particle method for the Camassa-Holm equation*, Proceedings of the 13th International Conference on “Hyperbolic Problems: Theory, Numerics and Applications” (Ph. G. Ciarlet and Ta-Tsien Li, eds.), Contemporary Applied Mathematics, 2012, pp. 365–373.
30. A. Chertock, K. Fellner, A. Kurganov, A. Lorz and P. Markowich, *Sinking, merging and stationary plumes in a coupled chemotaxis-fluid model: a high-resolution numerical approach*, Journal of Fluid Mechanics, **694** (2012), pp. 155–190.
31. A. Chertock, J.-G. Liu and T. Pendleton, *Convergence of a particle method and global weak solutions for a family of evolutionary PDEs*, SIAM Journal on Numerical Analysis, **50** (2012), pp. 1–21.
32. A. Chertock, A. Kurganov, Z. Qu and T. Wu, *On a three-layer approximation of two-layer shallow water equations*, Mathematical Modelling and Analysis, **18** (2013), pp. 675–693.
33. A. Chertock, A. Kurganov, A. Polizzi, and I. Timofeyev, *Pedestrian flow models with slow-down interactions*, M<sup>3</sup>AS: Mathematical Models and Methods in Applied Sciences, **24** (2014), pp. 249–275.
34. A. Chertock, A. Kurganov and Y. Liu, *Central-upwind schemes for the system of shallow water equations with horizontal temperature gradients*, Numerische Mathematik, **127** (2014), pp. 595–639.
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