Curriculum Vitae

Bojan Popov

Address

Department of Mathematics
Texas A&M University
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Education

- **Ph.D. University of South Carolina**, August 1999
  Thesis: "Linear transport equations"
- **M.S. Mathematics, University of Sofia**, June 1992
  Thesis: "Bernstein's operators with Jacobi weights, Quadrature formulas in functional classes determined by averaged moduli of smoothness"

Research Interests

- Numerical Methods for Partial Differential Equations
- Transport Equations and Approximation Theory

Grant Support

- ONR Grant: "Advanced Methods for Data/Image/Signal Processing", June 15 – August 15, 2000, total funding $11,020.
- ONR Grant: "Advanced Methods for Data/Image/Signal Processing", June 15 – August 15, 2001, total funding $11,320.
- NSF, DMS, Computational Mathematics, Award Number 0811041: "L1-based Approximations of PDEs", CO-PI, (with Jean-Luc Guermond as PI), June 15, 2005 – May 31, 2008, $677,545.
- Conference funding from Texas A&M, IMA and ARO for "Nonlinear approximation techniques using L1", May 2008, CO-PI, total funding $22,500.
- NSF, DMS, Computational Mathematics, Award Number 0811041: "L1-based Approximations of PDEs", PI, (with Jean-Luc Guermond as CO-PI) July 1, 2008 – June 30, 2012, total funding $329,997.
- KAUST Global Research Partnership Center Grant, IAMCS Investigator, total funding $25,000,000.

- DOE-LLNL (2011-2014), Support of Stockpile Stewardship Program, CO-PI, total funding $2,936,677.
- DOD-AFOSR, "L1-based Approximations of PDEs and Applications", CO-PI, (with Jean-Luc Guermond as PI), 2009 – 2011, total funding $344,986.
- DOD-AFOSR, "Entropy Viscosity and L-1 Based Approximations of PDEs: Exploiting Sparsity", CO-PI, (with Jean-Luc Guermond as PI), July 2012 – June 2014, total funding $450,000.
- NSF, DMS, Computational Mathematics, Award Number 1217262, PI, (with Jean-Luc Guermond as CO-PI) "High-Order Approximation Techniques for Nonlinear Hyperbolic PDEs", September 2012 – August 2016, total funding $300,000.
- DOD-AFOSR, "Robust Approximation Of Nonlinear Hyperbolic Systems", CO-PI, 2015 – 2017, $445,000.
- DOD-Army-Army Research Office, "Finite Element Approximation of Nonlinear Systems Developing Shocks Fronts And Interfaces", CO-PI, 2015-2018, $440,000.
- NSF, DMS, Computational Mathematics, Award Number 1619892, PI, (with Jean-Luc Guermond as CO-PI) "High-Order Invariant Domain Preserving Numerical Methods for Nonlinear Hyperbolic Systems", September 2016 – August 2019, total funding $249,084.
- DOE-LLNL, Computational R&D In Support of Stockpile Stewardship Program, CO-PI, 2017 – 2019 total funding $3,000,000.
- DOD-AFOSR, "Robust and Accurate Approximation of Hyperbolic Systems", CO-PI, 2018 – 2021, total funding $515,733.
- NSF, DMS, Computational Mathematics, Award Number 2110868, PI, (with Jean-Luc Guermond as CO-PI) "High-Order Invariant Domain Preserving Approximations of Myltiphysics Systems of Conservation Equations", August 2021 – July 2024, total funding $592,061.

Professional Experience

- **Professor, Department of Mathematics, Texas A&M University**, September 2012 – present
- **Associate Professor, Department of Mathematics, Texas A&M University**, September 2007 – August 2012
- **Assistant Professor, Department of Mathematics, Texas A&M University**, August 2001 – August 2007
- **Assistant Professor (postdoc), Department of Mathematics, Vanderbilt University**, September 1999 – July 2001

Teaching Experience

- **Assistant Professor, Department of Mathematics, Texas A&M University**, September 2001 – August 2007
  Courses: Vector Calculus, Linear Algebra, Numerical Analysis, Matrix Computations, Topics in Applied Mathematics I, Differential Equations, Partial Differential Equations, Hyperbolic Conservation Laws

- **Assistant Professor, Department of Mathematics, Vanderbilt University**, September 1999 – July 2001
  Courses: Methods of Linear Algebra, Linear Algebra, Calculus, Numerical Analysis

Conference Presentations

1. "Robust approximations for the the Euler equations with a tabulated equation of state", Support Of Stockpile Stewardship annual meeting, College Station TX, February 2022

2. "Invariant domain preserving schemes for hyperbolic systems", AFSOR annual meeting, Washington DC, August 2021.

3. "Invariant domain preserving approximations for the Euler system with a tabulated equation of state", The 13th International Conference on Large-Scale Scientific Computations. LSSC'19, Sozopol, Bulgaria, June 2021.

4. "Accurate upper bound for the maximum speed of propagation in the Riemann problem", SIAM Texas-Louisiana 3rd annual meeting, October 2020.

5. "Robust explicit relaxation technique for solving the Green-Naghdi equations", Structure Preserving Numerical Methods for Hyperbolic PDEs, SUSTech University, China, November 2019.

6. "Invariant domain preserving schemes for hyperbolic systems", AFSOR annual meeting, Washington DC, August 2019.

7. "Convex Limiting for Nonlinear Hyperbolic Systems", The 12th International Conference on Large-Scale Scientific Computations. LSSC'19, Sozopol, Bulgaria, June 2019.

8. "Convex Limiting for Nonlinear Hyperbolic Systems with Source Terms", SIAM CSE meeting, Spokane, WA, February 2019.

9. "Second-order invariant domain preserving approximation of the Euler equations using convex limiting", HYP2018, June 2018

10. "Second-order invariant domain preserving approximation of the Euler equations using convex limiting", minisymposium at ECOMAS, June 2018

11. "Second order invariant domain preserving schemes for hyperbolic systems", AFSOR annual meeting, Washington DC, August 2017.

12. "Invariant domain preserving schemes for hyperbolic systems", Mathematical Days in Sofia, Bulgaria, July 2017.

13. "Convergence and error estimates for invariant domain preserving schemes", Multiscale and High-Dimensional Problems, Oberwolfach, Germany, April 2017

14. "Convergence Estimates for the Approximation of Scalar Conservation Equation", SIAM CSE meeting, Atlanta, March 2017.

15. "Maximum principle preserving numerical approximations of nonlinear hyperbolic conservation laws", Sixth Conference on Numerical Analysis and Applications, NAA'16, Lozenetz, Bulgaria, June 2016.

16. 'Invariant domain preserving methods for general hyperbolic systems", Seventh Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences, Bulgaria, July 2015.

17. 'Invariant domain preserving methods for general hyperbolic systems", Higher Order Numerical Methods for Evolutionary PDEs: Applied Mathematics Meets Astrophysical Applications, Banff, May 2015.

18. "Entropy viscosity methods for nonlinear hyperbolic systems", New Discretization Methods for the Numerical Approximation of PDEs, Oberwolfach, Germany, January 2015.

19. "Recent developments in Entropy Viscosity", ANALYSIS AND NUMERICAL APPROXIMATION OF PDES, Zurich, Switzerland, September 2014.

20. "Central schemes for Mean Filed Games", Mathematics Days in Sofia, Sofia, Bulgaria, July 2014.

21. "Entropy Viscosity", Sixth Conference Finite Difference Methods: Theory and Applications, NAA'14, Lozenetz, Bulgaria, June 2014.

22. "Entropy Viscosity", LSSC'13, Special session on transport problems, Sozopol, Bulgaria, June 2013.

23. "Maximum principle and entropy consistency for numerical approximations of nonlinear hyperbolic conservation laws", Multiscale and high-dimensional problems, Oberwolfach, Germany, July 2013.

24. "Convergence of the Nessyahu-Tadmor scheme", Fifth conference on Numerical Analysis and applications, NAA'12, June 2012.

25. "Convergence of the Nessyahu-Tadmor scheme", HYP2012, 14th International Conference on Hyperbolic Problems; Theory, Numerics, Applications, Padova, Italy, June 2012.

26. "Entropy viscosity with DG methods", 4th annual IAMCS symposioum, KAUST, Saudi Arabia, May 2012.

27. "Entropy viscosity methods for nonlinear hyperbolic conservation laws", Numerical methods for incompressible fluid flow, Vancouver, Canada, July 2011.

28. "Entropy viscosity", 3rd annual IAMCS symposioum, KAUST, Saudi Arabia, May 2011.

29. "Entropy viscosity", Wavelets and Multiscale Methods, Oberwolfach, Germany, August 1 - August 7, 2010.

30. "Approximating PDEs in L1", Sparsity and Computation, Bonn, Germany, June 7 - June 11, 2010.

31. "Entropy viscosity", HYP2010, 13th International Conference on Hyperbolic Problems; Theory, Numerics, Applications, Beijing, China, June 15-19, 2010.

32. "Entropy viscosity", Multimat 2009; Numerical methods for multi-material fluids and structures, Pavia, Italy, September 21-25, 2009.

33. "Surface Reconstruction via L1-Minimization", invited minisimposium talk, 33rd SIAM Southeastern-Atlantic Section Conference, University of South Carolina, April 4–5, 2009.

34. "Approximating PDEs in L1", Ninth International Meeting on Approximation Theory of the University of Jaen, Ubeda, Spain, June 28 – July 2, 2008.

35. "Approximating PDEs in L1", Fourth Conference on Numerical Analysis and Applications, Lozenetz, Bulgaria, June 16–20, 2008.

36. "Second order schemes and entropy", HYP2008, 12th International Conference on Hyperbolic Problems; Theory, Numerics, Applications, College Park, USA, June 9–13, 2008.

37. "Approximating PDEs in L1", Nonlinear Approximation Techniques Using L1, College Station, Texas, USA, May 16–18, 2008.

38. "Approximation of first order PDEs in L1", Wavelets and Multiscale Methods, July 29 – August 4, 2007, Oberwolfach, Germany.

39. "L1-based approximations of PDEs", Nonlinear Methods in Computational Mathematics, the Summer Meeting of the Canadian Mathematical Society, June 2007, Winnipeg, Canada.

40. "L1-approximation of stationary Hamilton-Jacobi equations", 12th International Conference in Approximation Theory, San Antonio, Texas, March 2007.

41. "Numerical approximations of first order hyperbolic PDEs", Sixth International Conference on Numerical Methods and Applications, NM&A'06, Borovets, Bulgaria, August 2006.

42. "L_1 approximations of Hamilton-Jacobi equations", Eleventh International Conference on Hyperbolic Problems; Theory, Numerics, Applications, Lyon, France, July 2006.

43. "Approximation of first order PDEs in L_1", invited minisimposium talk, Modeling and Numerics of Complex Flows, ECMI 2006, Madrid, Spain, July 2006.

44. "Approximation of first order PDEs in L_1", invited talk, Pioneers Of Bulgarian Mathematics, International Conference, Sofia, July 8–10, 2006, Dedicated to Nikola Obrechkoff and Lubomir Tschakaloff.

45. "Approximation of first order PDEs in L_1", Texas Finite Element Rodeo, College Station, Texas, March 2006.

46. "Numerical stability, convergence and error estimates for non-oscillatory schemes", Tenth International Conference on Hyperbolic Problems Theory, Numerics, Applications, Osaka, Japan, September 2004.

47. "Minmod-type schemes for scalar conservation laws", Texas Finite Element Rodeo, Houston, Texas, March 2003.

48. "Entropic schemes for scalar conservation laws", Center for Approximation Theory Annual Symposium, Spring 2002.

49. "Non-oscillatory Schemes for Scalar Conservation Laws", Ninth International Conference on Hyperbolic Problems Theory, Numerics, Applications, Pasadena, California, March 2002.

50. "Entropic and Relaxed Entropic Schemes for Conservation Laws", Special Session on Approximation and Wavelets, AMS Meeting 963, Southeastern Section, Columbia, SC, March 2001.

51. "Weakly Non-Oscillatory Schemes for Scalar Conservation Laws", Trends in Approximation Theory, AMS Meeting 960 Birmingham, Alabama, November 2000.

52. "Convergence Theory for Scalar Conservation laws", invited talk, Hyperbolic Conservation Laws, Oberwolfach, Germany, October 2000.

53. "Linear Transport Equations with Continuous Solutions", Trends in Approximation Theory, Nashville, Tennessee, May 1999.

54. "Linear Transport Equations with Discontinuous Coefficients", 7th International Conference on Hyperbolic Problems, ETH Zürich, Switzerland, February 1998.

55. "Convexity Preserving Approximation in L_1", Southeast Conference in Approximation Theory, Nashville, Tennessee, November 1994.

Selected seminars and colloquium talks

1. "Robust approximations of hyperbolic systems", Oden Institute seminar, UT Austin, February 2022

2. "Entropy viscosity", Numerical Analysis seminar, University of Maryland, October 2012.

3. "Convergence of the Nessyahu-Tadmor scheme", Institute of Mathematics, Bulgarian Academy of Sciences, May 2012.

4. "Entropy viscosity for nonlinear conservation laws", Applied and Numerical Analysis seminar, University of Crete, Heraklion, May 2012.

5. "Entropy viscosity", Los Alamos National Laboratories, February 2010.

6. "Entropy viscosity methods for nonlinear conservation laws", Approximation Theory Seminar, TAMU, December 2009.

7. "Entropy viscosity", Sandia National Laboratories, December 2009.

8. "Entropy viscosity", ExxonMobil Upstream Research Company, Houston, Texas, May 2009.

9. "Entropy methods in nonlinear PDEs", Georgia Tech, November 2008.

10. "Approximating PDEs in L1", Tulane University, October 2008.

11. "Second order schemes and entropy", Texas A&M, October 2007.

12. "L1-approximation of Hamilton-Jacobi equations", University of South Carolina, September 2007.

13. Invitated talk at the workshop "Wavelet and Multiscale Methods", July 29th - August 4th, 2007, Oberwolfach, Germany.

14. "Nonoscillatory Central Schemes on Unstructured Meshes and Applications", ExxonMobil Upstream Research Company, Houston, Texas, April 2007.

Publications

In refereed journals

1. P. Parvanov and B. Popov, *The Limit Case of Bernstein's Operators with Jacobi Weights*, Mathematica Balkanica, New Series **8** (1994), Fasc.2–3, 165–177.

2. K. Ivanov and B. Popov, *On Convex Approximation by Quadratic Splines*, J. Approx. Theory, **85** (1996), 110–114.

3. G. Petrova and B. Popov, *Linear Transport Equations with Discontinuous Coefficients*, Comm. PDEs **24** (1999), 1849–1873.

4. G. Petrova and B. Popov, *Linear Transport Equations with μ-monotone Coefficients*, J. Math. Anal. and Appl., **260**, (2001), 307–324.

5. K. Kopotun, M. Neamtu and B. Popov, *Weakly Non-Oscillatory Schemes for Scalar Conservation Laws*, Math. Comp. **72**, (2003), 1747–1767.

6. S. Konyagin, B. Popov and O. Trifonov, *On Convergence of Minmod-Type Schemes*, SIAM Journal on Numerical Analysis **42** (2005), 1978–1997.

7. Jiangguo Liu, Bojan Popov, Hong Wang, and Richard E. Ewing, *Convergence Analysis of Wavelet Schemes for Convection-Reaction Equations under Minimal Regularity Assumptions*, SIAM Journal on Numerical Analysis **43** (2005), 521–539.

8. Y. Efendiev and B. Popov, *On Homogenization of Nonlinear Hyperbolic Equations*, Communications on Pure and Applied Analysis **4** (2005), 297–311.

9. B. Popov and O. Trifonov, *Order of convergence of minmod-type schemes*, Math. Comp. **75**, (2006), 1735–1753.

10. B. Popov and O. Trifonov, *One-sided stability and convergence of the Nessyahu-Tadmor scheme*, Numer. Math. **104**, (2006), 539–559.

11. J.-L. Guermond and B. Popov, *Linear advection with ill-posed boundary conditions via L1-minimization*, International Journal of Numerical Analysis & Modeling, **4**, (2007), 39–47.

12. A. Kurganov, G. Petrova and B. Popov, *Adaptive Semi-discrete Central-upwind Schemes*, SIAM J. Sci. Comput., **29** (2007), 2381–2401.

13. J.-L. Guermond, Fabien Marpeau and B. Popov, *L^1-minimization algorithms for Hamilton-Jacobi equations*, Communications in Mathematical Sciences 6 (2008), 199-216.

14. J.-L. Guermond and B. Popov, *L^1-minimization methods for Hamilton-Jacobi equations: the one-dimensional case*, Numerische Mathematics, **109**, (2008) , pp. 269–284.

15. I. Christov and B. Popov, *New nonoscillatory central schemes on unstructured triangulations for hyperbolic systems of conservation laws*, Journal of Computational Physics, **227**, (2008), pp. 5736–5757.

16. J.-L. Guermond and B. Popov, *L^1–approximation of stationary Hamilton-Jacobi equations*, SIAM Journal on Numerical Analysis **47** (2008/2009), 339–362.

17. J.-L. Guermond and B. Popov, *An optimal L^1-minimization algorithm for stationary Hamilton-Jacobi equations*, Communications in Mathematical Sciences 7 (2009), 211–238.

18. K. Kopotun and B. Popov, *Moduli of Smoothness of Splines and Applications in Constrained Approximation*, Jaen Journal on Approximation, vol. 2, no. 1, 2010, 77–89.

19. V. Dobrev, J.-L. Guermond and B. Popov, Surface reconstruction and image enhancement via L1-minimization, SIAM J. Sci. Comput., **32** (2010), 1591–1616.

20. J.-L. Guermond, R. Pasquetti, and B. Popov, *Entropy viscosity method for nonlinear conservation laws*, Journal of Computational Physics, **230** (2011), 4248–4267.

21. J.-L. Guermond, R. Pasquetti, and B. Popov, *From Suitable Weak Solutions to Entropy Viscosity*, Journal of Scientific Computing (2011), online DOI 10.1007/s 10915-010-9445-3.

22. O. Mehmetoglu and B. Popov, *Maximum principle and convergence of central schemes based on slope limiters*, Math. Comp., **81** (2012), 219–231.

23. V. Zingan, J.-L. Guermond, J. Morel, and B. Popov, *Implementation of the entropy viscosity method with the Discontinuous Galerkin method*, CMAME, (2013), 479–490.

24. J.-L. Guermond, M. Nazarov, B. Popov, Bojan, and Y. Yang, *A second-order maximum principle preserving Lagrange finite element technique for nonlinear scalar conservation equations*, SIAM J. Numer. Anal. **52** (2014), 2163–2182.

25. J.-L. Guermond, and B. Popov, *Viscous regularization of the Euler equations and entropy principles*, SIAM Journal on Applied Mathematics **74** (2014), 284–305.

26. A. Bonito, J.-L. Guermond, and B. Popov, *Stability Analysis of Explicit Entropy Viscosity Methods for Non-Linear Scalar Conservation Equations*, Math. Comp. **83** (2014), 1039–1062.

27. B. Popov and V. Tomov, *Central schemed for Mean Filed Games*, Commun. Math. Sci (2015), Vol. 13, No.8, pp. 2177-2194.

28. J.-L. Guermond, B. Popov, and V. Tomov, *Entropy Viscosity Method for the Single Material Euler Equations in Lagrangian Frame*, CMAME, (2016), Vol. 300, No.1, pp. 402–426.

29. J.-L. Guermond, and B. Popov, *Error estimates of a first-order Lagrange finite element technique for nonlinear scalar conservation equations*, SIAM J. Numer. Anal. **54** (2016), 57–85.

30. J.-L. Guermond, and B. Popov, *Invariant domains and first-order continuous finite element approximation for hyperbolic systems*, SIAM J. Numer. Anal. **54** (2016), 2466–2489.

31. J.-L. Guermond, and B. Popov, *Fast estimation from above of the maximum wave speed in the Riemann problem for the Euler equations*, Journal of Computational Physics, **321** (2016), 908–926.

32. J.-L. Guermond, B. Popov, L. Saavedra, and Y. Yang, *Invariant domains preserving ALE approximation of hyperbolic systems with continuous finite elements*, SIAM J. Sci. Comput., **39** (2017), no. 2, A385–A414.

33. J.-L. Guermond, B. Popov, and Y. Yang, *The effect of the consistent mass matrix on the maximum-principle for scalar conservation equations*, J. Sci. Comput., **70** (2017), 1358–1366.

34. P. Azerad, J.-L. Guermond, and B. Popov, *Well-Balanced Second-Order Approximation of the Shallow Water Equation with Continuous Finite Elements*, SIAM J. Numer. Anal. **55** (2017), 3203–3224.

35. J.-L. Guermond, and B. Popov, *Invariant domains and second order continuous finite element approximation for scalar conservation equations*, SIAM J. Numer. Anal. **55** (2017), 3120–3146.

36. J.-L. Guermond, M. Quezada de Luna, B. Popov, C. Kees, M. Farthing, *Well-balanced second-order finite element approximation of the shallow water equations with friction*, SIAM J. Sci. Comput. **40** (2018), no. 6, A3873–A3901.

37. J.-L. Guermond, M. Nazarov, B. Popov, I. Tomas, *Second-order invariant domain preserving approximation of the Euler equations using convex limiting*, SIAM J. Sci. Comput., **40** (2018), no. 5, A3211–A3239.

38. J.-L. Guermond, B. Popov, I. Tomas, *Invariant domain preserving discretization-independent schemes and convex limiting for hyperbolic systems*, CMAME (2019), Vol. 347, No.15, pp. 143–175.

39. J.-L. Guermond, B. Popov, E. Tovar, C. Kees, *Robust explicit relaxation technique for solving the Green-Naghdi equations*, J. Sci. Comput., **399** (2019), 108917, 17pp.

40. J.-L. Guermond, B. Popov, I. Tomas, *The Suliciu approximate Riemann solver is not invariant domain preserving*, J. Hyperbolic Differ. Equ., **16** (2019), no. 1, pp. 59–72.

41. J.-L. Guermond, B. Popov, L. Saavedra, *Second-order invariant domain preserving ALE approximation of hyperbolic systems*, J. Comput. Phys., **401** (2020), 108927, 26 pp.

42. J.-L. Guermond, B. Popov, J. Ragusa, *Positive and asymptotic preserving approximation of the radiation transport equation*, SIAM J. Numer. Anal. **58** (2020), no. 1, pp. 519—540.

43. J.-L. Guermond, M. Maier, B. Popov, I. Tomas, Second-order invariant domain preserving approximation of the compressible Navier-Stokes equations", Comput. Methods Appl. Mech. Engrg. **375** (2021), 113608, 17 pp.

44. B. Popov and Y. Hua, *Invariant domain preserving central schemes for nonlinear hyperbolic systems*, Communications in Mathematical Sciences 19 (2021), 529–556.

45. J.-L. Guermond, B. Popov, E. Tovar, C. Kees, *Hyperbolic relaxation technique for solving the dispersive Serre-Green-Naghdi equations with topography*, J. Comput. Phys., **450** (2022), 110809, 16 pp.

46. J.-L. Guermond, M. Maier, B. Popov, I. Tomas, Second-order invariant domain preserving approximation of the compressible Navier-Stokes equations", Comput. Methods Appl. Mech. Engrg. **389** (2022), 114250, 26 pp.

47. B. Clayton, J.-L. Guermond, B. Popov, *Invariant domain preserving approximations for the Euler equations with tabulated equation of state*, SIAM J. Sci. Comput., **44** (2022), no. 1, A444–A470.

In refereed proceedings

1. B. Popov, *Linear Transport equations with Continuous Solutions*, Trends in Approximation Theory, Vanderbilt University Press (2001), 365–374.

2. B. Popov, *Entropic Schemes for Scalar Conservation Laws*, Constructive Function Theory, Varna (2002), 385–390.

3. I. Christov, I. Mishev, and B. Popov, *Finite Volume Methods on Unstructured Voronoi Meshes for Hyperbolic Conservation Laws*, Proceedings of the 12th International Conference held in University of Maryland, June 2008 (E. Tadmor, J.-G. Liu, and A. Tzavaras, eds.), AMS Proc. Symp. Applied Math., 67(2) (2009), 507–517.

4. B. Popov and P. Popov, *A second order central scheme for Hamilton-Jacobi equations on triangular grids*, NAA'08, LNCS 5434, (2009), 447–485.

5. V. Dobrev, J.-L. Guermond and B. Popov, *Surface reconstruction via L1-minimization*, NAA'08, LNCS 5434, (2009), 32–43.

6. O. Mehmetoglu and B. Popov, *Maximum principle of central schemes with k-monotone fluxes*, Hyperbolic problems: theory, numerics and applications, HYP2010, Series in Contemporary Applied Mathematics CAM 17, Vol. 1, ISBN 978-7-04-034535-3, (2012), pp. 227–237.

7. J.-.L. Guermond, R. Pasquetti and B. Popov, *From suitable weak solutions to entropy viscosity*, Quality and Reliability of Larde-Eddy Simulations II, ERCOFTAC Series, Editor M. Salvetti, **3** (2010), 373–390, Springer, Berlin.

8. J.-L. Guermond, R. Pasquetti, and B. Popov, *Entropy viscosity for conservation equations*, Proceedings of the V European Conference on Computational Fluid Dynamics ECCOMAS CFD 2010 J. C. F. Pereira, A. Sequeira and J. M. C. Pereira (Eds) Lisbon, Portugal, 14–17 June 2010 ISBN: 978-989-96778-1-4.

9. J.-L. Guermond, O. Mehmetoglu and B. Popov, *Maximum principle and entropy consistency for numerical approximations of nonlinear hyperbolic conservation laws*, Cohen A, Dahmen W, DeVore R, Kunoth A., Multiscale and High-Dimensional Problems, Oberwolfach Rep. **10** (2013), 2234–2235.

10. J.-L. Guermond, and B. Popov, Entropy viscosity for the Euler equations and questions regarding parabolic regularization, Hyperbolic problems: theory, numerics an applications, AIMS Series on Applied Mathematics, Vol. 8, ISBN-13: 978-1-60133-017-8, (2014), pp. 119–124.

11. J.-L. Guermond, R. Pasquetti, and B. Popov, Stabilized spectral element approximation of the Saint Venant system using the entropy viscosity technique, Spectral and High Order Methods for PDEs, ICOSAHOM 2014, Lecture Notes in Computational Science and Engineering (2015), Vol. 106, No. 8, pp. 397–404.

12. J.-L. Guermond, B. Popov, L. Saavedra, and Y. Yang, Arbitrary Lagrangian-Eulerian finite element method preserving convex invariants of hyperbolic systems. 251–272, Comput. Methods Appl. Sci. 47, Springer, Cham, (2019).

13. J.-L. Guermond, B. Popov, and L. Saavedra, Second order invariant domain preserving ALE approximation of Euler equations, Commun. Appl. Math. Comput. (2021), 23 pp. https://doi.org/10.1007/s42967-021—165-y

Service

1. Referee for: Mathematics of Computation; Advances in Computational Mathematics; SIAM Journal on Numerical Analysis, Mathematical Analysis, and Scientific Computing; Journal of Approximation Theory; Numerische Mathematik; Journal of Mathematical Analysis and Applications; Applied Composite Materials.

2. Ph.D. committee chair for Orhan Mehmetoglu (Ph.D. 2012), Vladimir Tomov (Ph.D. 2014), and Yuchen Xua (Ph.D. 2019).

3. Organizer of the Numerical Analysis Seminar at Texas A&M.

4. Co-sponsored five post-doctoral scholars: P. Popov, F. Marpeaux, V. Dobrev, M. Nazarov, I. Tomas.