EUGENIO AULISA **October, 2022**

CURRICULUM VITAE

I. GENERAL INFORMATION

Contact Information

Department of Mathematics and Statistics, Texas Tech University,
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Education

- Ph.D. in Energetic, Nuclear and Environmental Control Engineering, University of Bologna, Italy (2005).
- M.S. in Nuclear Engineering, University of Bologna, Italy (2001).
- Scientific High School, Instituto Salesiano Don Bosco, Taranto, Italy (1994).

Current Academic Position

- 2016-present: Professor, Department of Mathematics and Statistics, TTU.

Prior Academic Positions

- 2012-2016: Associate, Department of Mathematics and Statistics, TTU. - 2007-2012: Assistant Professor, Department of Mathematics and Statistics, TTU.
- 2005-2007: Visiting Assistant Professor, Department of Mathematics and Statistics, TTU.
- 2003-2004: Teaching Assistant, University of Bologna, Italy.

Keywords for Research Interests

Computational Fluid Mechanics, including Modeling and Simulation of Multiphase Flows and Fluid-Structure Interaction Problems. Analysis of Non-Linear Flows in Fractured Porous Media. Stability Analysis of Thin Structures. Multilevel Domain Decomposition Solvers. Geometric Control for Distributed Parameter Systems. Geometric Flows. Optimal Control. The FEMuS project.

II. TEACHING

Teaching Awards

- 2019, Outstanding Mentor of the Year, Department of Mathematics and Statistics, TTU.
- 2018, Outstanding Mentor of the Year, Department of Mathematics and Statistics, TTU.
- 2017, Outstanding Mentor of the Year, Department of Mathematics and Statistics, TTU.
- 2016, Outstanding Mentor of the Year, Department of Mathematics and Statistics, TTU.
- 2015, President's Excellence in Teaching Award, Texas Tech University.
- 2008-2009, SIAM Graduate Professor of the Year, Department of Mathematics and Statistics, Texas Tech University.

RESEARCH MENTORING

Chair of Doctoral Committees

1. Currently advising the research of PhD students Himali Gammanpila and Rifat Rejuan.
2. Jonathon Loftin, *Exact CutFEM Polynomial Integration*, Mathematics & Statistics. August 2022.

3. Erdi Kara, *Nitsche-type Unfitted Fluid Structure Interaction Model Coupled with Material Point Method*, Mathematics & Statistics. August 2021.
4. Pushpi Paranamana, *Analytical, Numerical and Geometric Methods with Applications to Fractured Reservoir Modeling for Forchheimer Flows*, August 2018.
5. Sara Calandrini, *Fluid-Structure Interaction Simulations for Medical Applications,* Mathematics & Statistics, May 2018.
6. Giacomo Capodaglio, *Multigrid Methods For Finite Element Applications With Arbitrary-level Hanging Node Configurations,* Mathematics & Statistics, May 2018.
7. Thanuka Pathiranage, *Analysis of the Error in an Iterative Algorithm for Solution of Regulator Equations for Linear Distributed Parameter Control Systems*, August 2016.
8. Janitha Gunatilake, *Hierarchical Bases and a Multilevel Finite Element Solver,* Mathematics & Statistics, August 2014.
9. Lidia Bloshanskaya, *Non-linear analysis of Fluid flow in porous media and its application,* Mathematics & Statistics, August 2013.
10. Emine Yasemen Kaya, *Dynamics and Stability of Non-linear Beams with Changing Thickness Coupled with Fluid, and Non-linear Plates*, Mathematics & Statistics, December 2011.
11. Zeynep Kose, *Geometric and Numerical Methods for Bonnet Problems and Surface Reconstruction*, Mathematics & Statistics, December 2010.
12. Adem Cakmak, *Analysis of Nonlinear Darcy-Forchheimer Flows in Porous Media*, Department Mathematics & Statistics, August 2009.

Member of Doctoral Committees

1. Gayani, Balasuriya *Primal-Dual Weak Galerkin Finite Element Method for Maxwell's Equations*, August 2022.
2. Madusha Dilhani Atampalage, *Topics of Minimal Surfaces and Applications* Mathematics & Statistics, May 2021.
3. Neranjaka Jayarathne, *Geometric Control Problems in Binocular and Bivisual Sensing*, Mathematics & Statistics, August 2020.
4. Bikash Dey, *Numerical study of a new method to the solution of partial differential equation on irregular domain using Cartesian meshes*, Mechanical Engineering. August 2020.
5. Sureka Pathmanathan, *Boundary Optimal Control Problems with Integral Control Constraints for Fluid and Solid Mechanics*, Mathematics & Statistics, December 2019.
6. Saikanth Ratnavale, *Boundary Optimal Control Problems with Inequality Constraints*, Mathematics & Statistics, August 2019.
7. Gorumlu Serdar, *A design methodology for tunable adhesion and friction using curved and hierarchical structures*, Mechanical Engineering, August 2019.
8. Anthony Gruber, *Curvature functionals and p-Willmore energy*, Mathematics & Statistics, August 2019.
9. Guo Zheng Yew, *Advances in Glass Design*, Civil Engineering, August 2018.
10. Nasrin Farzana, *Smoothing Spline on Unit Ball Domains with Applications,* Mathematics & Statistics, May 2018.
11. Thanuja Paragoda, *Willmore energy and Generalized Willmore energy,* Mathematics & Statistics, August 2016.

12. Jennifer Emerson, *Fitting Control Theoretic Splines to very Large Data Sets,* Mathematics & Statistics, May 2015.
13. Narendran Sridhar, *Numerical prediction of wind flow over complex terrain with shallow and steep hills*, Mechanical Engineering, May 2015.
14. Bhagya Athukorallage, *Capillarity and elastic membrane theory from an energy point of view,* Mathematics & Statistics, August 2014.
15. Xu Rong, *Modelingof SolarEnergy Conversionand Electricity into Hydrogen,* Chemical Engineering, June 2014.
16. Duc Pham, *Accurate simulation of elastic and acoustic wave propagation problems using the linear finite elements with reduced dispersion and explicit time-integration method,* Mechanical Engineering, December 2013.
17. Indika Wijayasinghe, *Eye/head coordination under optimal and potential control,* Mathematics & Statistics, August 2013.
18. Gul Bulut, *Derivation of SPDE's for Correlated Random Walk Models and Phylogenetic Trees,* Mathematics & Statistics, May 2013.
19. Joon-Yeoun Cho, *Finite element modeling of martensitic phase transformations*, Mechanical Engineering, May 2009.

Chair of Master Committees

1. Shoo Lee, *Error Analysis for Harmonic Tracking Algorithm Using Geometric Control*, December 2016.
2. Anna Krylova, *Modeling and computational study of the impact of the non-linearity of the flow in the fractured porous media,* Mathematics & Statistics, December 2014.
3. Thanuka W. Pathiranage, *Error Analysis for Harmonic Tracking Algorithm Using Geometric Control,* Mathematics & Statistics, December 2013.
4. Sulanie Pereira, *Comparison of Optimal and Geometric Control Methods for regulation of distributed parameter systems,* Mathematics & Statistics, August 2013.
5. Karsli Neslihan, *Lubrication as a Dampening Force in the Model fo the Eye Rotatin Under Listing Constraint,* Mathematics & Statistics, August 2012.
6. Lidia Bloshanskaya, *Time-Invariant Characteristics of Generalized Forchheimer Flows in Porous Media and Applications,* Mathematics & Statistics, December 2010.
7. Janitha Gunatilake, *Modeling and Simulation for the Evaluation of the Productivity Index in Stratified Reservoir-Well Systems,* Mathematics & Statistics, December 2010.
8. Emine Yasemen Kaya, *Stability Analysis of Inhomogenous Equilibrium for Axially and Transversely Exited Nonlinear Beam*, Mathematics & Statistics, August 2010.
9. Dahwei Chang, *Peaceman's Numerical Productivity Index for Non-Linear Flows in Porous Media*, Mathematics & Statistics, August 2009.
10. Elizabeth White McGinnis. *Mathematical Modeling and Simulation of Fluid Structure Interaction for a High School Classroom.* Mathematics & Statistics, August 2007.

Member of Master Committees

1. Sanath Kahagalage, *Optimal Eye and Head Movement Control Using Q-Parametrization*, Mathematics & Statistics, December 2014.
2. Methma Rajamuni, *Optimal Control Problems in Human Binocular Vision,* Mathematics & Statistics, August 2014.
3. Thanuja Paragoda, *Surfaces of revolution at the intersection between physics and variational calculus,* Mathematics & Statistics, June 2014.

4. Glen Dale, *Contact Lens Design*, Mathematics & Statistics, June 2010.
5. Chisum Hu, *Derivation of a Stochastic Differential Equation Model for Derivation of a Stochastic Differential Equation Model for Sunspot Activity*, Mathematics & Statistics, December 2009.

Other Mentoring Activities

1. 2022-2024, Post-doctorate mentor of Andrea Chierici.
2. Fall 2022, Supervisor of PhD Student Giacomo Barbi, Research Scholar visiting from University of Bologna.
3. Spring 2020, Supervisor of PhD Student Andrea Chierici, Research Scholar visiting from University of Bologna.
4. 2016-2018, Post-doctorate mentor of Guoyi Ke.
5. September 2012 - June 2014, Supervisor of PhD Student Simone Bnà, "A MultiLevel Domain Decomposition Solver for Monolithic Fluid-Structure Interaction problems", University of Bologna.
6. September 2008 - April 2009, Supervisor of the Undergraduate student, Matthew Roth, in the consulting/research project for American Turbine, *Data analysis of the hydraulic pump efficiency*, Mathematics & Statistics.
7. May 2009 - September 2009, Supervisor of the High School student Julia Benson, in the research project, *Wave Mitigation with the Use of a Near-Shore Undersea Trench: A Physical and Mathematical Model*
8. Directed research of undergraduate students Amanda Allen (Texas Tech University, 2008), Jamy Ryals (REU, Summer 2007), Elizabeth Mcginnis (REU, Summer 2007, High School Teacher).

III. RESEARCH

FUNDING

External Applications, Funded

1. *NSF-DMS:1912902: Collaborative Research: Hybrid Fluid-Structure Interaction Material Point Method with applications to Large Deformation Problems in Hemodynamics*, E. Aulisa (PI). $250,000, Period: 2019-2022.
2. *NSF-DMS:1412796: Nonlinear Couplings for Flows in Fractured Porous Media: Analysis and Numerical Algorithms,* E. Aulisa (CoPI), G. Bornia(CoPI), L. Hoang (CoPI) A. Ibragimov (PI) and M. Toda (CoPI). Total requested: $318,322, Total received: $290,001, Period: 2014-2017.
3. *NSF-DMS 0908177: Analysis of Non-Linear Flows in Heterogeneous Porous Media and Applications,* E. Aulisa (CoPI), L. Hoang (CoPI) A. Ibragimov (PI) and M. Toda (CoPI). Applied Mathematics, National Science Foundation. Total requested: $350,000, Total received: $221,626, Period: 2009-2013.
4. *NSF-DMS 0931596: Mini-Symposium on Nonlinear Analysis, PDE, and Applications.* E. Aulisa (CoPI), L. Hoang (PI) and R. Kirby (CoPI). Applied Mathematics, National Science Foundation. Total requested: $15,000, Total received: $15,000, Period: 2009-2010.

5. *THECB-ARP 021244C399: Multidisciplinary Research Program in Computation and Control of Biological Systems.* E. Aulisa (PI) and A. Idesman (CoPI). Advanced Research Program-Mathematics, Texas Higher Education Coordinating Board. Total requested: $100,000, Total received $79,000, Period: 2007-2009.
6. *NSF-DMS 0610026: Mathematical and Computational Modeling of Fluid-Structure-Control Interactions with Multidisciplinary Applications in Science and Engineering,* E. Aulisa (Senior Personnel), S. Manservisi (CoPI) and P. Seshaiyer (PI). Computational Mathematics, National Science Foundation ($92,312). Total requested: $300,000, Total received $220,281, Period: 2006-2009. E. Aulisa (PI) of the NSF-DMS 0813825 subcontract from George Mason University Total requested: $19,817, Total received $19,817, Period: 2007-2009.
7. *American Turbine 103284 :Data analysis of hydraulic pump efficiency,* E. Aulisa (PI). Total requested: $7,000, Total received $7,000, Period: 2008-2009.

PUBLICATIONS

Book

1. E. Aulisa and D.S. Gilliam, *A Practical Guide to Geometric Regulation for Distributed Parameter Systems,* CRC Press, a Taylor & Francis Company, June 2015.

Articles

1. P. Paranamana, E. Aulisa, M. Toda, *Geometric Model of the Fracture as a Manifold Immersed in Porous Media*, Journal of Mathematical Physics, 62, 35., 2021.
2. E. Aulisa, G. Capodaglio, G. Ke, *A computational study of preconditioning techniques for the stochastic diffusion equation with lognormal coefficient*, International Journal of Numerical Analysis & Modeling, 2021.
3. E. Aulisa, G. Capodaglio, A. Chierici, M. D'Elia, *Efficient quadrature rules for finite element discretizations of nonlocal equations*, Numerical Methods for Partial Differential Equations, 2021.
4. E. Kara, A. Rahman, E. Aulisa, S. Ghosh, *Tumor ablation due to inhomogeneous anisotropic diffusion in generic three-dimensional topologies*, Physical Review E, 102(6), 2020
5. A. Gruber, E. Aulisa, *Computational P-Willmore Flow with Conformal Penalty*, ACM Transactions on Graphics, 39(5), 16.
6. E. Aulisa, G. Bornia, V. Howle, G. Ke, *Field-of-values analysis of preconditioned linearized Rayleigh-Banard convection problems*, Journal of Computational and Applied Mathematics, 369, 2020.
7. S. Calandrini, E. Aulisa, G. Ke, *A field-split preconditioning technique for fluid-structure interaction problems with applications in biomechanics*, International Journal for Numerical Methods in Biomedical Engineering, 36(3), 2020.
8. S. Calandrini, E. Aulisa, *Fluid-structure interaction simulations of venous valves: A monolithic ALE method for large structural displacements*, International Journal for Numerical Methods in Biomedical Engineering, 35(2), 2019.
9. E. Aulisa, D. Gilliam and T. Pathiranage, *Analysis of the error in an iterative algorithm for asymptotic regulation of linear distributed parameter control systems*, ESAIM: M2AN Vol. 53(5), pp. 1577-1606, 2019.
10. E. Aulisa, G. Capodaglio, *Monolithic coupling of the implicit material point method with the finite element method*, Computers & Structures, Vol. 219, pp. 1-15, 2019.

11. P. Paranamana, E. Aulisa, A. Ibraguimov, M. Toda, *Fracture Model Reduction and Optimization for Forchheimer Flows in Reservoirs*, Journal of Mathematical Physics, Vol. 60(5), 2019.
12. S. Calandrini, E. Aulisa, *Fluid-structure interaction simulations of venous valves: A monolithic ALE method for large structural displacements*, International Journal for Numerical Methods in Biomedical Engineering, Vol. 35(2), 2019.
13. E. Aulisa, G. Capodaglio, G. Ke. *Construction of H-refined continuous finite element spaces with arbitrary hanging node configurations and applications to multigrid algorithms*, SIAM Journal on Scientific Computing, Vol. 41(1), pp.A480-A507, 2019.
14. E. Aulisa, S. Bnà, G. Bornia, *A monolithic ALE Newton–Krylov solver with Multigrid-Richardson–Schwarz preconditioning for incompressible Fluid-Structure Interaction,* Computers & Fluids, Accepted, 2018.
15. G. Ke, E. Aulisa, *New preconditioning techniques for the steady and unsteady buoyancy driven flow problems*, Journal of Computational Physics Vol. 371, pp. 244-2602, 2018.
16. E. Aulisa, G. Bornia, S. Calandrini, G. Capodaglio, *Convergence estimates for multigrid algorithms with SSC smoothers and applications to overlapping domain decomposition*, Applied Numerical Mathematics Vol. 131, pp. 16-38, 2018.
17. G. Ke, E. Aulisa, G. Dillon, V. Howle, *Augmented Lagrangian-based preconditioners for steady buoyancy driven flow*, Applied Mathematics Letters Vol. 82, pp. 1-7, 2018.
18. E. Aulisa, G. Ke, S.Y. Lee *An adaptive mesh refinement strategy for finite element solution of the elliptic problem*, Computers & Mathematics with Applications Vol. 76(2), pp. 224-244, 2018.
19. E. Aulisa, D.S. Gilliam, TW. Pathiranage, *Analysis of an iterative scheme for approximate regulation for nonlinear systems*, International Journal of Robust and Nonlinear Control, Vol. 28(8), pp. 3140-3173, 2018.
20. E. Aulisa, S. Calandrini, G. Capodaglio, *An improved multigrid algorithm for n-irregular meshes with subspace correction smoother*, Computers & Mathematics with Applications, Vol. 76(3), 2018.
21. E. Aulisa, S. Calandrini, G. Capodaglio. *Magnetic drug targeting simulations in blood flows with fluid-structure interaction.* International Journal for Numerical Methods in Biomedical Engineering, Vol. 34 (4) e2954, 2018.
22. E. Aulisa, S. Calandrini, G. Capodaglio. *FOV-equivalent block triangular preconditioners for generalized saddle-point problems.* Applied Mathematics Letters, Vol. 75 (2018), pp. 43-49, 2008.
23. G. Capodaglio, E. Aulisa. *A particle tracking algorithm for parallel finite element applications.* Computers and Fluids, Vol 159 (2017), pp. 338-335.
24. G. Ke, E. Aulisa, G. Bornia, V. Howle. *Block triangular preconditioners for linearization schemes of the Rayleigh-Bénard convection problem.* Numerical Linear Algebra with Applications, Vol. 24(5) (2017), e2096.
25. L. Bloshanskaya, E. Aulisa, A. Ibraguimov. *Well productivity index for compressible fluids and gases.* Evolution Equations and Control Theory (EECT) - AIMS, Vol. 5(1) (2016), pp. 1-36.
26. I. Wijayasinghe, E. Aulisa, U. Bittner, B. Ghosh, S. Glassauer, O. Kremmyda. *Potential and Optimal Target Fixating Control of the Human Head/Eye Complex.* Control Systems Technology, IEEE Transactions on, Vol. 23(2) (2015), pp. 796-804.

27. E. Aulisa, G. Bornia, S. Manservisi, *Boundary control problems in convective heat transfer with lifting function approach and multigrid Vanka-type solvers,* Accepted in Communications in Computational Physics (2015).
28. B. Athukorallage, E. Aulisa, R. Iyer, L. Zhang, *A Macroscopic Theory for Capillary Pressure Hysteresis,* Langmuir; DOI:10.1021/la504495c (2015).
29. I.B. Wijayasinghe, E. Aulisa, U. Bittner, B.K. Ghosh, S. Glasauer, O. Kremmyda, *Potential and Optimal Target Fixating Control of the Human Head/Eye Complex,* Control Systems Technology, IEEE Transactions on, Vol. 23(2),pp. 796-804 (2015).
30. E. Aulisa, A. Ibragimov, E.Y. Kaya-Cekin *Fluid Structure Interaction Problem with Changing Thickness Beam and Slightly Compressible Fluid,* Discrete and Continuous Dynamical Systems - Series S, Vol. 7(6) (2014), pp. 1133-1148.
31. E. Aulisa, L. Bloshanskaya, Y. Efendiev, A. Ibragimov *Upscaling of Forchheimer Flows,* Advances in Water Resources, Vol. 70 (2014), pp. 77-88.
32. E. Aulisa, S.R.J. Jang, *Continuous-time predator-prey systems with Allee effects in the prey,* Mathematics and Computers in Simulation, Vol. 105 (2014), pp. 1-16.
33. E. Aulisa, D. Gilliam. *A Numerical Algorithm for Set-Point Regulation of Non-Linear Parabolic Control Systems.* International Journal of Numerical Analysis and Modeling, Vol. 11(1) (2014), pp. 54-88.
34. M. Toda, E. Aulisa, Z. Kose. *Constructing isothermal curvature line coordinates on surfaces which admit them.* Central European Journal of Mathematics (CEJM), Vol. 26 (2013), pp.1-20.
35. E. Aulisa, A. Ibragimov, E. Kaya. *Stability Analysis of Non-linear Plates Coupled with Darcy Flows.* Evolution Equations and Control Theory (EECT), Vol. 2(2) (2013), pp. 193-232.
36. E. Aulisa, L. Bloshanskaya, A. Ibragimov. *Time asymptotic of non-Darcy flows controlled by total flux on the boundary.* PMA (Problems in Mathematical Analysis) and JMS(N.Y)(Journal of Mathematical Science, New York, Springer, Vol. 184(4) (2012), pp. 399-430.
37. E. Aulisa, S. Garcia, E. Swim, P. Seshaiyer. *Multilevel Non-Conforming Finite Element Methods for Coupled Fluid-Structure Interactions.* International Journal of Numerical Analysis and Modeling, Series B, Vol. 3(3) (2012), pp 307-319.
38. E. Aulisa, E. Kaya, A. Ibragimov, P. Seshaiyer. *Stability analysis of inhomogeneous equilibrium for axially and transversely excited nonlinear beam.* Communication in Pure and Applied Analysis, Vol. 10(5) (2011), pp. 1447-1462.
39. Z. Kose, M. Toda, E. Aulisa. *Solving Bonnet Problems to Construct Families of Surfaces.* Differential Geometry and Dynamical Systems, Vol. 16(2) (2011), pp. 70-80.
40. E. Aulisa, L. Bloshanskaya, A. Ibragimov, *Long-term Dynamics for Well Productivity Index for Nonlinear Flows in Porous Media.* Journal of Mathematical Physics, Vol. 52 (on-line, 2011).
41. E. Aulisa, P. Seshaiyer, S. Manservisi, A. Idesman. *Distributed computational method for coupled fluid structure thermal interaction applications.* Journal of Algorithms & Computational Technology, Vol. 4(3) (2010), pp. 291-310.
42. E. Aulisa, A. Ibragimov, M. Toda. *Geometric Framework for Modeling Nonlinear Flows in Porous Media, and Its Applications in Engineering.* Journal of Non-linear Analysis - Real Word Application, Vol. 11(3) (2010), pp. 1734-1751.

43. E. Aulisa, L. Bloshanskaya, L. Hoang, A. Ibragimov. *Analysis of Generalized Forchheimer Flows of Compressible Fluids in Porous Media.* Journal of Mathematical Physics, Vol. 50(10) (2009), (Online) pp. 44.
44. E. Aulisa, A. Ibragimov, J.R. Walton. *A new method of evaluating the productivity index for non-linear flows.* SPE Journal, SPE-108984-PA (2009).
45. E. Aulisa, A. Ibragimov, P.P. Valko, J.R. Walton. *Mathematical Framework of the Well Productivity Index for fast Forchheimer (Non-Darcy) Flows in Porous Media.* Journal of Mathematical Models and Methods in Applied Sciences (M3AS), Vol. 19(8) (2009), pp. 1241-1275.
46. E. Aulisa, A. Cervone, S. Manservisi, P. Seshaiyer. *A Multilevel Domain Decomposition Approach for Studying Coupled Flow Application.* Communications in Computational Physics, Vol. 6 (2009), pp. 319-341.
47. E. Kaya, E. Aulisa, A. Ibragimov, P. Seshaiyer. *A stability estimate for fluid structure interaction problem with non-linear beam.* Discrete and Continuous Dynamical System DCDS (Supplement 2009), pp.424-432.
48. A. Idesman, H. Samajder, E. Aulisa, P. Seshaiyer. *Benchmark problems for wave propagation in elastic materials.* Computational Mechanics, Vol. 43 (2009), pp. 797-814.
49. E. Aulisa, S. Manservisi, P. Seshaiyer. *A multilevel domain decomposition approach to solving coupled applications in computational fluid dynamics.* Int. J. Numeric. Meth. Fluids Vol. 56(8) (2008), pp. 1139-1145.
50. E. Aulisa, S. Manservisi, R. Scardovelli, S. Zaleski. *Interface reconstruction with least-squares fit and split advection in three dimensional Cartesian geometry.* Journal of Computational Physics, Vol. 225(2), pp. 2301-2319 (2007).
51. E. Aulisa, A. Cakmak, A. Ibragimov, A. Solynin. *Variational Principle and Steady State Invariants for Non-Linear Hydrodynamic Interactions in Porous Media.* Dynamics of Continuous, Discrete and Impulsive Systems, A Supplement, Advances in Dynamical Systems, Vol. 14(S2), pp. 148-155 (2007).
52. E. Aulisa, S. Manservisi, R. Scardovelli. *A novel representation of the surface tension force for two-phase flows with reduced spurious current.* Computer Methods in Applied Mechanics and Engineering, Vol. 195-44/47 (2006), pp. 6239-6257.
53. E. Aulisa, S. Manservisi, P. Seshaiyer. *A computational multilevel approach for solving 2D Navier-Stokes equations over non-matching grids.* Computer Methods in Applied Mechanics and Engineering, Vol. 195-33/36 (2006), pp.4604-4616.
54. F. Aubert, E. Aulisa, S. Manservisi, R. Scardovelli. *Interface tracking with dynamically-redistributed surface markers in unstructured quadrangular grids.* Computers & Fluids, Vol. 35-10 (2006), pp. 1332-1343.
55. E. Aulisa, S. Manservisi, P. Seshaiyer. *A non-conforming computational methodology for modeling coupled problems.* Nonlinear Analysis, Vol. 63-5/7 (2005), pp. 555-584.
56. E. Aulisa, A. Barletta, M. Gallipoli, A. Terenzi, E. Zanchini. *CFD Analysis and Overheating Control of a Turbine.* International Journal of Thermal Sciences, Vol. 43 (2004), pp. 1119-1124.
57. E. Aulisa, S. Manservisi, R. Scardovelli. *A surface marker algorithm coupled to an area-preserving marker redistribution method for three-dimensional interface tracking.* Journal of Computational Physics, Vol. 197-2 (2004), pp. 555-584.

58. E. Aulisa, S. Manservisi, R. Scardovelli, S. Zaleski. *Geometrical area-preserving Volume-of-Fluid advection method.* Journal of Computational Physics, Vol. 192-1 (2003), pp 355-364.
59. E. Aulisa, S. Manservisi, R. Scardovelli. *A mixed marker and volume-of-fluid method for the reconstruction and advection of interfaces in two-phase and free-boundary flows.* Journal of Computational Physics, Vol. 188-2 (2003), pp 611-639.

Book Chapters

1. E. Aulisa, A. Ibragimov, M. Toda. *Geometric Methods in the analysis of non-linear flows in porous media.* Contemporary Mathematics, Spectral Theory and Geometric Analysis, pp. 27-42 (2011).
2. E. Aulisa, S. Manservisi. *A multigrid approach to the optimal velocity tracking problem for Navier-Stokes flows.* Robust Optimization-Directed Design, Non-convex Optimization and Its Applications, Springer, New York, Vol. 81 (2006), pp. 5-26.
3. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *A FEM Navier-Stokes solver coupled to a front tracking algorithm for two-phase flows.* Computational fluid and solid mechanics (2005), Elsevier, pp.751-754.

Proceedings (refereed)

1. E. Aulisa, J. Burns, D. Gilliam, *Approximate Error Feedback Controller for Tracking and Disturbance Rejection for Linear Distributed Parameter Systems*, Proceedings of the 2022 American Control Conference, ACC 2022.
2. E. Aulisa, J. Burns, D. Gilliam, S.T. Paruchuri, *Accurate Approximate Regulation of Nonlinear Delay Differential Control Systems*, 2021 60th IEEE Conference on Decision and Control (CDC).
3. A. Gruber, E. Aulisa, *Quaternionic Remeshing for Surface Evolution*, American Institute of Physics, 2021.
4. E. Aulisa, A. Gruber, M. Toda,H. Tran, *New Developments on the p-Willmore Energy of Surfaces* (pp. 57 - 65). XXI Int Conf. Geom. Integrability & Quantization, Project Euclid & Bulgarian Academy of Science, Avangard Prima, 2020.
5. E. Aulisa,G. Bornia, S. Calandrini. *Fluid-Structure Interaction Modeling Of Artery Aneurysms With Steady-State Configurations* (pp. 616-627). VII International Conference on Computational Methods for Coupled Problemsin Science and Engineering, 2017.
6. E. Aulisa, G. Bornia, S. Calandrini *Fluid-Structure Simulations and Benchmarking of Artery Aneurysms under Pulsatile Blood Flow* (pp. 955-974). National Technical University of Athens, 2017: COMPDYN 2017 - 6th International Thematic Conference, 2017.
7. B. Athukorallage, E. Aulisa, G. Bornia, T.G. Paragoda, M. Toda. *New Advances in The Study of Generalized Willmore Surfaces and Flow* (vol. 17, pp. 133-142). 17th International Conference on Geometry, Itegrability and Quantization, published in Journal of Geometry and Symmetry in Physics, 2016.
8. E. Aulisa, J.A. Burns, D. Gilliam. *Velocity Control of a Counter-Flow Heat Exchanger* (vol. 49(18), pp. 104-109). IFAC-PapersOnLine, Elsevier, 2016.
9. E. Aulisa, D. Gilliam, T.W. Pathiranage. *Analysis of the Error for Harmonic Tracking Using an Iterative Scheme in Geometric Control* (vol. 17). 17th International Conference on Geometry, Itegrability and Quantization, published in Journal of Geometry and Symmetry in Physics,2015.

10. E. Aulisa, J. Burns, D. Gilliam. *The Effect of Viscosity in a Tracking Regulation Problem for a Counter-Flow Heat Exchanger.* Proceedings of the 54th IEEE Conference on Decision and Control, to be held in Osaka International Convention Center, Osaka, Japan on December 15-18, 2015.
11. E. Aulisa, S. Bnà, G. Bornia, *Multigrid Solver with Domain Decomposition Smoothing for Steady-State Incompressible FSI Problems.* Proceedings of the 5th International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, 2015.
12. M. Rajamuni, E. Aulisa, B. Ghosh, *Optimal Control Problems in Binocular Vision,* Proceedings of the 19th IFAC World Congress, 2014. Cape Town, South Africa, Vol. 19 (1), pp.5283-5289 (DOI 10.3182/20140824-6-ZA-1003.02644).
13. S. Kahagalage, E. Aulisa, B. Ghosh, *Optimal Eye and Head Movement Control Using Q-Parametrization,* Proceedings of the 19th IFAC World Congress, 2014. Cape Town, South Africa, Vol. 19 (1), pp.5290-5295, (DOI, 10.3182/20140824-6-ZA-1003.02650).
14. S. Bnà, S. Manservisi, E. Aulisa, *A multilevel domain decomposition solver for monolithic fluid-structure interaction problems,* 11th International Conference of Numerical Analysis and Applied Mathematics 2013: ICNAAM 2013. AIP Conference Proceedings, Volume 1558. AIP Conference Proceedings, Vol. 1558(1), pp. 871-874 (2013).
15. E. Aulisa, D.S. Gilliam, *Regulation of a Controlled Burgers' Equation: Tracking and Disturbance Rejection for General Time Dependent Signals* (pp. 1290-1295). Proceedings of 2013 American Control Conference (ACC) Washington, DC, USA, June 17-19, 2013
16. E. Aulisa, J. Burns, D.S. Gilliam, *An example of thermal regulation of a two dimensional non-isothermal incompressible flow* (pp. 1578-1583). Proceedings 51st IEEE Conference on Decision and Control, 2012.
17. E. Kaya, E. Aulisa, A. Ibragimov and P. Seshaiyer. *Fluid structure interaction problem with changing thickness non-linear beam.* Dynamical Systems and Differential Equations, DCDS Supplement 2011, Proceedings of the 8th AIMS International Conference (Dresden , Germany).
18. E. Aulisa, S. Manservisi, P. Seshaiyer. *A Computational Domain Decomposition Approach for solving Coupled Flow-Structure-Thermal Interaction Problems.* Seventh Mississippi State-UAB Conference on Differential Equations and Computational Simulations. Electron. J.Diff. Eqns., Conference 17 (2009), pp. 13-31.
19. E. Aulisa, S. Manservisi, P. Seshaiyer. *A Multilevel Domain Decomposition Methodology for Solving Coupled Problems in Fluid-Structure-Thermal Interaction.* Proceedings of ECCM 2006, Lisbon, Portugal (2006).
20. L. Ferguson, E. Aulisa, P. Seshaiyer. *Computational modeling of highly flexible membrane wings in micro air vehicles.* Proceedings of the 47th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference Newport, RI (2006).
21. E. Aulisa, A. Ibragimov, P. Valko, J. Walton. *COMSOL Multi-physics machinery as a tool for developing an analytical method for computation of the productivity index of the well for high velocity non-Darcy flow.* Proceedings of COMSOL Users Conference 2006, Boston (2006).
22. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *Front tracking with an area-preserving marker redistribution algorithm: kinematic and dynamic tests.* Proceedings of ECCOMAS 2004, Computational Methods, Jyvaskyla, Finland (2004).

23. E. Aulisa, S. Manservisi, P. Seshaiyer. *Applications of non-conforming finite element methods to fluid dynamics.* Proceedings of ECCOMAS 2004, Computational Methods, Jyvaskyla, Finland (2004).
24. F. Aubert, E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *A coupled marker and local area conservation method for interface tracking.* MACSI-net Workshop, Industrial challenges in the numerical simulation of evolving interfaces, Brussels, Belgium (2003).
25. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *A Three-dimensional Algorithm for Reconstruction and Advection of Compressible and Incompressible Two-Phase Flow Interfaces.* Proceedings of the 21th UIT National Heat Transfer Conference, Udine, Italy (2003).
26. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *A markers-vof algorithm for incompressible flows with interfaces.* Proceedings of 2002 ASME Fluids Engineering Division, Summer Meeting (FEDSM'02), Montreal, Canada (2002).
27. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli, A. Terenzi. *Application of CFD methods to the study of phase distribution at an impacting T.* Proceedings of the 8th International Conference on Multiphase Flow in Industrial Plants, Alba, Cuneo, Italy (2002).
28. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli, A. Terenzi. *Determination of phase and pressure distribution in pipeline systems by CFD Modeling and Simulation.* Proceedings of the 8th Int. Conference on Multiphase Flow in Industrial Plants, Alba, Cuneo, Italy (2002).
29. E. Aulisa, S. Manservisi, R. Tomassini, R. Scardovelli. *Tecniche per la ricostruzione di interfacce con porzioni di superfici piane.* Proceedings of the 19th UIT National Heat Transfer Conference, University of Modena and Reggio Emilia, Modena, Italy (2001).

Non Peer-Reviewed Publications

1. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *Modeling two-phase flow with a FEM method and a new hybrid marker-VOF algorithm.* Proceedings of Workshop 2003, Montecuccolino Laboratory, Bologna, Italy (2003).
2. E. Aulisa, S. Manservisi, V. Marra, R. Scardovelli. *Numerical investigation and design of phase and pressure distributions in pipeline systems with CFD-VOF methods.* Proceedings of Workshop 2003, Montecuccolino Laboratory, Bologna, Italy (2003).

Manuscripts Currently Submitted

1. E. Aulisa, J. Burns, D. Gilliam, *Approximate Tracking for Distributed Parameter Systems Using Only Sensed Data*
2. E. Aulisa, J. Loftin, *Exact CutFEM Polynomial Integration*
3. A. Gruber, E. Aulisa, *Quasiconformal Mappings with Surface Domains*

PROFESSIONAL PRESENTATIONS

Plenary Talk

1. XVII international Conference, Geometry, Integrability and Quantization *Error Analysis in an Iterative Algorithm for the Solution of the Regulator Equations for Distributed Parameter Systems* E. Aulisa*, D.S. Gilliam and T.W. Pathiranage. Varna, Bulgaria, June 5-10, 2015.

Conference presentations

1. 2021 60th IEEE Conference on Decision and Control (CDC), *Accurate Approximate Regulation of Nonlinear Delay Differential Control Systems*, IEEE, Austin, USA. December 13, 2021. Aulisa, E., Burns, J., Gilliam, D.*, Paruchuri, S. T.

2. SIAM Annual Meeting (AN21), *Nitsche-type Unfitted Fluid Structure Interaction Model Coupled with Material Point Method* SIAM. July 2021. Kara, E.*, Aulisa, E.
3. SIAM Dynamic Systems 2021, *A Fluid Structure Interaction Model Coupled with Material Point Method on Unfitted Mesh.* SIAM. May 2021. Kara, E.*, Aulisa, E.
4. Society for Mathematical Biology 2021 Annual Meeting, *Diffusion Tensor Imaging (DTI) Based Drug Diffusion - Population Model in a Solid Tumor.* May 2021. Kara, E.*, Aulisa, E., Rahman, A., Ghosh, S.
5. 2021 Joint Spring Meeting of the Texas Sections of APS, AAPT and Zone 13 of the SPS, *Nitsche-type Unfitted Fluid Structure Interaction Model Coupled with Material Point Method* APS, Virtual. April 8, 2021. Kara, E.*, Aulisa, E.
6. APS March Meeting 2021, *Diffusion Tensor Imaging (DTI) Based Drug Diffusion - Population Model in a Solid Tumor APS*, Virtual. March 16, 2021. Kara, E.*, Aulisa, E., Rahman, A., Ghosh, S.
7. One Nonlocal World, *Efficient quadrature rules for finite element discretizations of nonlocal equations.* Virtual. January 21, 2021. Chierici, A.*, Aulisa, E., Capodaglio, G., D'Elia, M.
8. 3rd Annual Meeting of the SIAM Texas-Louisiana Section, *Diffusion Tensor Imaging (Dti) Based Drug Diffusion Model In A Solid Tumor*, Texas A&M University. October 2020. Kara, E.*, Aulisa, E.
9. 3rd BYMAT Conference, *Diffusion Tensor Imaging (Dti) Based Drug Diffusion Model In A Solid Tumor*, Valencia, Spain. October 2020. Kara, E.*, Aulisa, E.
10. 18th International Conference of Numerical Analysis and Applied Mathematics, ICNAAM 2020, *Quaternionic Remeshing During Surface Evolution.* September 2020. Gruber, A.*, Aulisa, E.
11. SIAM/CAIMS Annual Meeting 2020, *Computationally tractable mechanistic model of drug diffusion and tumor ablation.* Toronto, Ontario, Canada. July 2020. Kara, E.*, Aulisa, E.
12. APS March Meeting 2020 (meeting postponed), *Computationally tractable mechanistic model of inhomogeneous-anisotropic drug diffusion and tumor ablation.* Department of Mathematics and Statistics, TTU, Denver, CO. March 2020. Kara, E.*, Aulisa, E.
13. AMS meeting, Special Session on Applications of Differential Equations in Mathematical Biology, *Time dependent equilibrium in biological system.* AMS, Florida. November 1, 2019. Ibraguimov, A.*, Aulisa, E., Peace, A. A.G.
14. Northern States Section 1st Annual Meeting For the Northern States Section of SIAM September 27th - 29th, 2019, *Fracture Modeling and Optimization for Nonlinear Flows in Reservoirs* SIAM, University of Wyoming Laramie, WY. September 23, 2019. Ibraguimov, A.*, Aulisa, E., Toda, M., Paranamana, P.
15. 9th International Congress on Industrial and Applied Mathematics (ICIAM), *Analytical, Numerical and Geometric Methods with Applications to Fractured Porous Media.* Modeling Valencia, Spain. July 2019. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
16. XXII Conference on Geometry, Integrability and Quantization, p-Willmore Energies; *Surfaces and Flow.* European Math. Soc. (EMS) and Bulg. Acad. of Sci. (BAS), Varna. June 2019. Toda, M.*, Tran, H., Gruber, A., Aulisa, E.
17. Mathematical and Computational Issues in the Geosciences 2019, *Analytical, Numerical and Geometric Methods with Applications to Fractured Porous Media Modeling.* Hous-

ton, Texas, USA. March 2019. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.

18. Conference, *Qualitative properties of the Forchheimer Flow and Applications in the Engineering.* SIAM Geoescience, Houston. March 13, 2019. Ibraguimov, A.*, Aulisa, E., Hoang, L.
19. Joint Mathematics Meetings 2019, *A new preconditioning technique for fluid-structure interaction problems with applications in biomechanics.* Baltimore, Maryland. January 2019. Ke, G.*, Aulisa, E., Calandrini, S.
20. Mathematical Biology Seminar, *An ALE Method for Large Structural Displacements in Fluid-structure Interaction Simulations of Venous Valves* University of Colorado, Boulder, CO., September 25, 2018. Calandrini, S.*, Aulisa, E.
21. SIAM Annual Meeting 2018, *An ALE Method for Large Structural Displacements in Fluid-structure Interaction Simulations of Venous Valves* Portland, OR. July 13, 2018. Calandrini, S.*, Aulisa, E.
22. SIAM Annual Meeting 2018, *Coupling of Material Point Method with Finite Element Method based on a Shared Background Grid*, Portland, OR. July 13, 2018. Capodaglio, G.*, Aulisa, E.
23. The 15th Copper Mountain Conference on Iterative Methods, *A multigrid algorithm with subspace correction smoother for grids with arbitrary hanging node configurations.* Copper Mountain. March 15, 2018. Calandrini, S.*, Aulisa, E., Capodaglio, G.
24. The 15th Copper Mountain Conference on Iterative Methods, *Augmented Lagrangian-based preconditioners for steady buoyancy driven flow Copper Mountain.* March 15, 2018. Ke, G.*, Aulisa, E., Dillon, G., Howle, V.
25. The 15th Copper Mountain Conference on Iterative Methods, *Construction of continuous finite element spaces with arbitrary-level hanging nodes and applications to multigrid algorithms.* Copper Mountain. March 15, 2018. Capodaglio, G.*, Aulisa, E., Ke, G.
26. Joint Mathematics Meetings, *New preconditioner techniques for the buoyancy driven flow problems.* San Diego, CA. January 15, 2018. Ke, G.*, Aulisa, E.
27. SIAM Conference on Analysis of Partial Differential Equations, *Fracture Modeling and Optimization for Nonlinear Flows in Coupled Fracture Porous Media Baltimore*, Maryland. December 12, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
28. Texas Applied Mathematics and Engineering Symposium, *Magnetic Drug Targeting: a comparison between FSI and CFD simulations.* University of Texas at Austin, Austin, Texas. September 23, 2017. Calandrini, S.*, Aulisa, E., Capodaglio, G.
29. Texas Applied Mathematics and Engineering Symposium, *Fracture Model Reduction and Optimization for Nonlinear Flows in Porous media* Austin TX, September 22, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
30. Texas Applied Mathematics and Engineering Symposium, *Hypersurface Model of the Fracture for Nonlinear Fluid Flows.* Austin TX, September 22, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
31. Texas Applied Math and Engineering Symposium, *Construction of h-refined finite element spaces with applications to multigrid algorithms.* UT Austin, Austin, TX. September 21, 2017. Capodaglio, G.*, Aulisa, E., Ke, G.
32. AMS Sectional Conference, *Fracture Model Reduction and Optimization for Nonlinear Flows in Porous media.* Denton TX, September 9, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.

33. SIAM Annual Meeting, *Hypersurface Model of the Fracture for Nonlinear Fluid Flows.* July 11, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
34. International Conference on Current Trends and Challenges in Numerical Solution of Partial Differential Equations, *New preconditioner techniques for the steady and unsteady buoyancy driven flow problems.* Purdue University, West Lafayette, Indiana. July 7, 2017. Ke, G.*, Aulisa, E.
35. 27th Biennial Numerical Analysis Conference, *Field-Of-Values analysis of preconditioned Rayleigh-Bernard convection problems.* University of Strathclyde, Glasgow. June 29, 2017. Aulisa, E., Bornia, G.*, Howle, V., Ke, G.
36. 27th Biennial Numerical Analysis Conference, *Fluid-structure interaction simulations of magnetic drug targeting Strathclyde University.* June 28, 2017. Capodaglio, G.*, Aulisa, E., Calandrini, S.
37. 6th ECCOMAS Conference - COMPDYN, *Fluid-Structure Simulations and Benchmarking of Artery Aneurysms under Pulsatile Blood Flow.* Rhodes Island, Greece. June 16, 2017. Calandrini, S.*, Aulisa, E., Bornia, G.
38. COUPLED PROBLEMS 2017, *Fluid-Structure Interaction Modeling Of Artery Aneurysms With Steady-State Configurations.* Rhodes Island, Greece. June 13, 2017. Calandrini, S.*, Aulisa, E., Bornia, G.
39. West Texas Applied Math Graduate Minisymposium, *An adaptive mesh refinement strategy for finite element solutions of elliptic problem.* Texas Tech University, Lubbock, TX. April 28, 2017. Lee, S.-Y.*, Aulisa, E., Ke, G.
40. West Texas Applied Math Graduate Minisymposium, *Fracture Model Reduction and Optimization for Nonlinear Flows in Porous media* Texas Tech University, Lubbock, TX. April 28, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
41. West Texas Applied Math Graduate Minisymposium, *New preconditioner techniques for the steady and unsteady buoyancy driven flow problems.* Texas Tech University, Lubbock, TX. April 28, 2017. Ke, G.*, Aulisa, E.
42. AMS Meeting - Charleston SC, March 9-12, 2017, *Fracture Model Reduction and Optimization for Nonlinear Flows in Porous Media.* AMS - Abstract 1126-51-45 / March 11. March 11, 2017. Paranamana, P.*, Aulisa, E., Ibraguimov, A., Toda, M.
43. AMS Meeting - Charleston SC, March 9-12, 2017, *Generalized bending energies and protein folding* AMS - SS 10A - Special Session on Geometry and Symmetry in Integrable Systems. March 11, 2017. Toda, M.*, Aulisa, E.
44. AMS Spring Southeastern Sectional Meeting, *A Parallel Particle Tracking Algorithm for Finite Element Applications.* College of Charleston, Charleston, SC. March 11, 2017. Capodaglio, G.*, Aulisa, E.
45. AMS Spring Southeastern Sectional Meeting, *Numerical Simulations and Benchmarking for Fluid-Structure Interaction Modeling of Artery Aneurysms Charleston.* March 11, 2017. Calandrini, S.*, Aulisa, E.
46. Finite Element Rodeo, *Fully incompressible Newton-Krylov solver with multigrid-Schwarz preconditioning for Fluid Structure Interaction.* University of Houston, Houston, TX. March 3, 2017. Aulisa, E., Bna', S., Bornia, G.*
47. Finite Element Rodeo 2017, *A Parallel Particle Tracking Algorithm for Finite Element Applications.* University of Houston, Houston, TX. March 3, 2017. Capodaglio, G.*, Aulisa, E.

48. Finite Element Rodeo 2017, *Fluid-Structure Simulations of Stented Artery Aneurysms under Pulsatile Blood Flow Houston.* March 3, 2017. Calandrini, S.*, Aulisa, E.
49. SIAM Conference on Computational Science and Engineering, *A Parallel Particle Tracking Algorithm for Finite Element Applications.* SIAM (Society for Industrial and Applied Mathematics), Atlanta, GA. February 28, 2017. Capodaglio, G.*, Aulisa, E.
50. SIAM Conference on Computational Science and Engineering, *A Comparison of Adaptive Mesh Refinement Techniques for Poisson's Equation.* SIAM, Atlanta, GA. February 27, 2017. Lee, S.Y.*, Aulisa, E., Ke, G.
51. SIAM Conference on Computational Science and Engineering, *Numerical Simulations for Fluid-Structure Interaction Modeling of Artery Aneurysms.* Atlanta. February 27, 2017. Calandrini, S.*, Aulisa, E.
52. SIAM Conference on Computational Science and Engineering, *Preconditioning techniques for Picard method, Newton method, and Picard-Newton mixed method for the Benard convection problem.* Society for Industrial and Applied Mathematics (SIAM), Atlanta, GA. February 27, 2017. Ke, G.*, Aulisa, E., Bornia, G., Howle, V.
53. NOLCOS 2016, 10th IFAC Symposium on Nonlinear Control Systems, *Velocity Control of a Counter-Flow Heat.* Exchange IFAC, Monetary. August 23, 2016. Gilliam, D.*, Aulisa, E., Burns, J.
54. Texas DE Conference 2016, *Analysis of the Error in an Iterative Algorithm for Solution of Regulator Problems for Linear & Nonlinear Distributed Parameter Control Systems.* Texas State University, San Marco University. April 9, 2016. Wijenayaka Pathiranage, T.*, Aulisa, E., Gilliam, D.
55. *Computational Methods for Control of Infinite-dimensional Systems, Recent Results in Geometric Regulation for Distributed Parameter Control Systems.* IMA, Control Theory and its Applications, University of Minnesota. March 14, 2016. Gilliam, D.*, Aulisa, E.
56. Joint Math Meeting, *Willmore energy and generalized Willmore energy.* AMS, SIAM, MAA, AWM, Seattle.(January 6, 2016. Toda, M., Aulisa, E., Bornia, G., Paragoda Gamage, T.*
57. The 35th Southeastern Atlantic Regional Conference on Differential Equations, *Analysis of the Error in an Iterative Algorithm for Solution of the Regulator Problems for Linear Distributed Parameter Control Systems.* The University of North Carolina at Greensboro, Greensboro, NC. October 10, 2015. Wijenayaka Pathiranage, T.*, Aulisa, E., Gilliam, D.
58. Grand Challenges in Geological Fluid Mechanics, *On Forchheimer flows in porouse media and application in Engineering.* Los Alamos National Laboratory,sponsored by the Center for Nonlinear Studies and the Institute of Geophysics, Planetary Physics and Signatures, La Posada de Santa Fe hotel in Santa Fe, New Mexico. September 2, 2015. Ibraguimov, A.*, Aulisa, E., Hoang, L., Bloshanskaya, L.
59. 2015 International Conference on Partial Differential Equations (ICPDE 2015), *On some qualitative properties of non-linear parabolic equations and application in reservoir engineering.* Engineering Information Institute, Shanghai China, Shanghai China. July 19, 2015. Ibraguimov, A.*, Aulisa, E., Hoang, L., Bloshanskaya, L.
60. Joint Mathematics Meeting 2015. *Analysis of the Error in an Iterative Algorithm for Solution of the Regulator Equations for Linear Distributed Parameter Control Systems* E. Aulisa, D.S. Gilliam and T.W. Pathiranage*. San Antonio TX, January 10-13 2015.

61. Texas PDE conference 2015, *Analysis of the Error in an Iterative Algorithm for Solution of the Regulator Equations for Linear Distributed Parameter Control Systems* E. Aulisa, D.S. Gilliam and T.W. Pathiranage*. Houston, March 28-29, 2015.
62. International Conference on Spectral and High Order Methods (ICOSAHOM), *A hierarchical basis multigrid method with domain decomposition smoothing for p-type finite element methods.* E. Aulisa, J. Gunatilake*. Salt Lake City UT, USA. June 24, 2014.
63. Joint Mathematics Meetings 2014, *A multilevel domain decomposition algorithm using the hierarchical element structure.* E. Aulisa, J. Gunatilake*. Baltimore MD, USA, January 15, 2014.
64. SIAM Conference on Mathematical & Computational Issues in the Geosciences, *Upscaling of Fine Scale Geological Models for Non-Linear Flow Simulations,* E. Aulisa*, L. Bloshanskaya, Y. Efendiev, A. Ibragimov, SIAM, Padova, Italy, June 16, 2013.
65. MAA Sectional Meeting 2013, *Comparison of Optimal and Geometric Control Methods for regulation of distributed parameter systems,* E. Aulisa, D. Gilliam, S. Perera*, The 93rd Texas MAA, Lubbock TX, USA, April 2013.
66. AMS Sectional Meeting 2013 at Montana State University, Bozeman, *Geometric Theory of Output Regulation: Solving the Regulator Equations,* E. Aulisa, D. Gilliam, S. Perera*, Department of Mathematics, Montana State University, March 21, 2013.
67. Joint Mathematics Meeting 2013, *Time Asymptotics Of Non-Darcy Flows Controlled By Total Flux On The Boundary,* L. Bloshanskaya*, E. Aulisa, A. Ibragimov, L. Hoang, San Diego, CA, USA, January 11, 2013.
68. Fall Western Sectional Meeting, *Up-scaling method for Forchheimer flow of the compressible and incompressible fluid in heterogeneous porous media.,* E. Aulisa, L. Bloshanskaya *, A. Ibragimov, Y. Efendiev, ANS, University of Arizona, Tucson, AZ October 27-28, 2012, October 2012.
69. SIAM Conference on Mathematical & Computational Issues in the Geosciences, GS11. *Upscaling of Fine Scale Geological Models for Non-Linear Flow Simulations* E. Aulisa*, A. Ibragimov, Long Beach, CA, March 21-24, 2011.
70. SIAM Conference on Mathematical & Computational Issues in the Geosciences, GS11. *Modeling of Well Productivity Index for Nonlinear Flows and Applications in Reservoir Engineering* L. Bloshanskaya*, E. Aulisa, Long Beach, CA, March 21-24, 2011.
71. InterPore 2010 Conference and Annual Meeting. *New methods for modeling productivity index of the well for generalized Forchheimer flows in porous media.* Texas A &M University, College Station, TX, March 15, 2010. E. Aulisa, L. Bloshanskaya*, A. Ibragimov, L. Hoang.
72. The International Conference of Differential Geometry and Dynamical Systems (DGDS-2010). *Bonnet problems via Cartan moving frames.* University Politehnica of Bucharest, Bucharest, Romania, August 25, 2010. E. Aulisa, M. Toda, Z. Kose*.
73. 2010 Fall Western Section Meeting. *Dynamics and stability of the non-linear model for fluid coupling with 1-D beam of changing thickness and 2-D plate.* AMS, Los Angeles, CA. October 10, 2010. E. Aulisa, A. Ibragimov, E. Kaya*.
74. 2010 Fall Western Section Meeting, UCLA Special Session on Nonlinear Phenomena: Applications of PDEs to Fluid Flows., *Longterm Dynamics for Well Productivity Index for Nonlinear Flows in Porous Media.* UCLA, Los Angeles, CA, October 10, 2010. E. Aulisa, L. Bloshanskaya*.

75. SIAM Conference on Mathematics for Industry: Challenges and Frontiers (MI09). *Large Mathematical model of well productivity index for generalized Forchheimer flows and application.* San Francisco, CA, October 2009. E. Aulisa, L. Bloshanskaya*, L. Hoang, A. Ibragimov.
76. Seventh AIMS International Conference on Dynamical Systems. *Non-linear Flows and Steady State Invariants in Porous media.* A rlington, Texas May, 2008. E. Aulisa, A. Cakmak*, A. Ibragimov.
77. Seventh AIMS International Conference on Dynamical Systems. *A Stability Estimate for Fluid Structure Interaction Problem with Non-Linear Beam.* Arlington, TX, May 2008. E. Aulisa, Y. Kaya*, A. Ibragimov.
78. SPE Annual Technical Conference and Exhibition. *A new method of evaluating the productivity index for non-linear flows.* Anaheim, California, November 11-14, 2007. E. Aulisa*, A. Ibragimov, P. Valko, J. Walton.
79. ECCM 2006, *A Multilevel Domain Decomposition Methodology for Solving Coupled Problems in Fluid-Structure-Thermal Interaction.* Lisbon, Portugal, June 2006. E. Aulisa*, S. Manservisi, P. Seshaiyer.

Invited talk

1. Probability, Differential Geometry, and Mathematical Physics Seminar, *Fluid Structure Interaction with Application in Hemodynamics*, Department of Mathematics and Statistics, TTU. February 24, 2021. E. Aulisa*.
2. Applied Mathematics Seminar, *Fluid structure interaction problems with application in hemodynamics.* Virginia Tech, Blacksburg, VA. March 14, 2017. E. Aulisa*.
3. *Modeling two-phase flows with a FEM solver of the Navier-Stokes equations,* Department of Mathematics and Statistics, Texas A&M University April 2006, E. Aulisa*.
4. *Non-linear Flows in porous media and application to multi-phase filtration,* ICES, University of Texas, Austin, March 2008. E. Aulisa*.

Colloquia

1. *Modeling, Analysis and Applications of non-linear Flows.* Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX. September 2015. E. Aulisa*.
2. *Non-linear Problems in Hydrodynamics and Applications.* Texas Tech University, Department of Mathematics and Statistics, E. Aulisa*, September 2011.
3. *A Multilevel Domain Decomposition Methodology for Solving Coupled Problems.* Department of Mathematics and Statistics, Texas Tech University, E. Aulisa*, February 2007.

CONFERENCE WORKSHOP ORGANIZED

1. Organizer of the *2013 Red Rider Mini-Symposium: Aspects of Fluid Dynamics,* The 13th Annual Red Raider Mini-Symposium, Texas Tech University, October 25-26, 2013.
2. Organizer of the Mini-symposium *Dynamics of Non-linear Flows in Porous Media: Analysis and Applications,* GEO-SIAM 2013, Padova, Italy, June 2013.
3. Organizer of the *2009 Red Rider Mini-Symposium: Non-linear analysis, PDEs and applications.* The 9th Annual Red Raider Mini-Symposium, October 29-31, 2009.
4. Organizer of the Mini-symposium *Domain Decomposition Techniques for Coupled Problems in Science and Engineering.* 9th US National congress on Computational Mechanics, San Francisco, CA, July 23-26, 2007.

SERVICE

Departmental Service

- 2022-2028, *Yifan Wang's* faculty mentor.
- 2007-today, member of the *Emmy Noether Day Committee* for the organization of the 6^{th}-to-22^{nd} Emmy Noether High School Mathematics Days, Dep. Mat.&Stat, TTU.
- 2009-today, *Departmental Fall Party*, host and organizer.
- 2017-2023, *Wei Guo's* faculty mentor.
- 2021-2023, *Graduate Committee* member.
- 2021-2022, *Hiring Committee* member.
- Spring 2022, *Kazuo Yamazaki's 3rd Year Evaluation Committee* chair.
- Summer 2021, *Senior Business Administrator Hiring Committee* member.
- Spring 2021, *Chunmei Wang's 3rd Year Evaluation Committee* chair.
- 2019-2022, *Department Resource Committee* member.
- 2016-2018, *Graduate Committee* member.
- 2015-2021, *TTU SIAM Chapter* faculty advisor .
- 2013-2019, *Giorgio Bornia's* faculty mentor.
- 2011-today, served 16 times as the *Calculus III with Applications* course coordinator.
- 2007-2018, co-organizer of the *Applied Mathematics Seminar.*
- 2017-2019, *West Texas Applied Math Graduate Minisymposium,* 1^{st} , 2^{nd} *and* 3^{rd}, faculty advisor.
- 2016 - 2017, *Computational Mathematics Hiring Committee* chair.
- 2012-2014, *Executive Committee* member.
- 2012-2014, *Graduate Committee* member.
- 2013, *Departmental Tenure & Promotion Policy Review Committee* chair.
- 2014-2015, *Modeling and Computation Position Hiring sub-Committee* chair.
- 2013, co-organizer of the *2013 Red Rider Mini-Symposium: Aspects of Fluid Dynamics.*
- 2008-2011, *South Plain Mathematics Scholarship* faculty mentor (undergraduate).
- Spring 2011, member of the *Steering Committee* for the departmental hiring strategy.
- 2009-2010, member of the *Calculus III Syllabus/Curriculum Review Committee.*
- 2008-2009, co-organizer of the *2009 Red Rider Mini-Symposium: Non-linear Analysis, PDEs and Applications.*
- 2007-2009, *SIAM Chapter* advisor.
- 2007-2009 and 2013, member of the *Numerical Analysis Preliminary Exam Committee.*

University Service

- 2017-2022 *Graduate School scholarships/fellowships committee* member.
- 2022, *Arvind Balasubramanian - PhD Defense* Dean representative .
- 2017, *Sumedha Liyanage - PhD Defense* Dean representative .

Service to the Profession

Editorial Board

- Discontinuity, Nonlinearity, and Complexity. Associate Editor, December 2018 - Present.
- Editorial Board Member of the Conference Proceedings, Civil-Comp Press, PARENG 2009, 2011, 2013, 2015, 2017, 2019

Reviewer

Served as a referee for

- Compuer & Fluids
- Numerical Algorithms,
- Journal of Computational Physics,
- Transactions on Mechatronics
- International Journal for Numerical Methods in Fluids,
- Journal of Mathematical Physics,
- Journal of Biological Dynamics,
- Computer & Mathematics with Applications,
- Cardiovascular Engineering and Technology,
- International Journal of Advances in Engineering Software,
- International Journal for Numerical Methods in Biomedical Engineering
- International Journal for Numerical Methods in Fluids
- Journal of Computational Methods in Sciences and Engineering,
- IEEE, IFAC, CDC, and ACC conference Proceedings.
- the conference Proceedings of 21st International Symposium on Mathematical Theory of Networks and Systems (2014),
- the AIP-conference Proceedings of the International Conference of Numerical Analysis and Applied Mathematics 2013 (ICNAAM 2013)
- the conference Proceedings of the 8th AIMS Conference on Dynamical Systems, AIMS (2010 - 2011).