

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 (2002).
- Scientific High School, Istituto 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.

II. TEACHING**Teaching Awards**

- 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. Pushpi Paranamana, *Analytical, Numerical and Geometric Methods with Applications to Fractured Reservoir Modeling for Forchheimer Flows*, August 2018.
2. Sara Calandrini, *Fluid-Structure Interaction Simulations for Medical Applications*, Mathematics & Statistics, May 2018.
3. Giacomo Capodaglio, *Multigrid Methods For Finite Element Applications With Arbitrary-level Hanging Node Configurations*, Mathematics & Statistics, May 2018.
4. Thanuka Pathiranage, *Analysis of the Error in an Iterative Algorithm for Solution of Regulator Equations for Linear Distributed Parameter Control Systems*, August 2016.
5. Janitha Gunatilake, *Hierarchical Bases and a Multilevel Finite Element Solver*, Mathematics & Statistics, August 2014.

6. Lidia Bloshanskaya, *Non-linear analysis of Fluid flow in porous media and its application*, Mathematics & Statistics, August 2013.
7. Emine Yasemen Kaya, *Dynamics and Stability of Non-linear Beams with Changing Thickness Coupled with Fluid, and Non-linear Plates*, Mathematics & Statistics, December 2011.
8. Zeynep Kose, *Geometric and Numerical Methods for Bonnet Problems and Surface Reconstruction*, Mathematics & Statistics, December 2010.
9. Adem Cakmak, *Analysis of Nonlinear Darcy-Forchheimer Flows in Porous Media*, Department Mathematics & Statistics, August 2009.

Member of Doctoral Committees

1. Guo Zheng Yew, *Advances in Glass Design*, Civil Engineering, August 2018.
2. Nasrin Farzana, *Smoothing Spline on Unit Ball Domains with Applications*, Mathematics & Statistics, May 2018.
3. Thanuja Paragoda, *Willmore energy and Generalized Willmore energy*, Mathematics & Statistics, August 2016.
4. Jennifer Emerson, *Fitting Control Theoretic Splines to very Large Data Sets*, Mathematics & Statistics, May 2015.
5. Narendran Sridhar, *Numerical prediction of wind flow over complex terrain with shallow and steep hills*, Mechanical Engineering, May 2015.
6. Bhagya Athukorallage, *Capillarity and elastic membrane theory from an energy point of view*, Mathematics & Statistics, August 2014.
7. Xu Rong, *Modeling of Solar Energy Conversion and Electricity into Hydrogen*, Chemical Engineering, June 2014.
8. 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.
9. Indika Wijayasinghe, *Eye/head coordination under optimal and potential control*, Mathematics & Statistics, August 2013.
10. Gul Bulut, *Derivation of SPDEs for Correlated Random Walk Models and Phylogenetic Trees*, Mathematics & Statistics, May 2013.
11. Joon-Yeoun Cho, *Finite element modeling of martensitic phase transformations*, Mechanical Engineering, May 2009.

Chair of Master Committees

1. S. 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. Pathirana, *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 for the Eye Rotation 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, *Peacemans 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.

Student Mentoring Activities

1. Currently advising the research of PhD student: Kara Erdi.
2. 2016-2018 Post-doctorate mentor of G. Ke.
3. Supervisor of the Undergraduate student, Matthew Roth, in the consulting/research project for American Turbine, *Data analysis of the hydraulic pump efficiency*, Mathematics & Statistics. (September 2008 - April 2009).
4. 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* (May 2009 - September 2009).
5. Supervisor of PhD Student Simone Bnà, "A MultiLevel Domain Decomposition Solver for Monolithic Fluid-Structure Interaction problems", University of Bologna (September 2012 - June 2014).
6. 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

PUBLICATIONS ¹

Articles

1. E. Aulisa, S. Bnà, G. Bornia, *A monolithic ALE NewtonKrylov solver with Multigrid-RichardsonSchwarz preconditioning for incompressible Fluid-Structure Interaction*, Computers & Fluids, Accepted, 2018.
2. 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.

¹Underlined authors are directed graduate students.

3. 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.
4. 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.
5. 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.
6. E. Aulisa, D.S. Gilliam, T.W. Pathirana, *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.
7. 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.
8. 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.
9. 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.
10. G. Capodaglio, E. Aulisa. *A particle tracking algorithm for parallel finite element applications*. Computers and Fluids, Vol 159 (2017), pp. 338-335.
11. G. Ke, E. Aulisa, G. Bornia, V. Howle. *Block triangular preconditioners for linearization schemes of the Rayleigh-Bnard convection problem*. Numerical Linear Algebra with Applications, Vol. 24(5) (2017), e2096.
12. L. Bloshanskaya, E. Aulisa, A. Ibragimov. *Well productivity index for compressible fluids and gases*. Evolution Equations and Control Theory (EECT) - AIMS, Vol. 5(1) (2016), pp. 1-36.
13. 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.
14. E. Aulisa, G. Bornia, S. Manservigi, *Boundary control problems in convective heat transfer with lifting function approach and multigrid Vanka-type solvers*, Accepted in Communications in Computational Physics (2015).
15. B. Athukorallage, E. Aulisa, R. Iyer, L. Zhang, *A Macroscopic Theory for Capillary Pressure Hysteresis*, Langmuir; DOI:10.1021/la504495c (2015).
16. 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).
17. 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.
18. E. Aulisa, L. Bloshanskaya, Y. Efendiev, A. Ibragimov *Upscaling of Forchheimer Flows*, Advances in Water Resources, Vol. 70 (2014), pp. 77-88.
19. 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.

20. 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.
21. 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.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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).
28. 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.
29. 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.
30. 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.
31. 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).
32. 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.
33. 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.
34. 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.

35. A. Idesman, H. Samajder, E. Aulisa, P. Seshaiyer. *Benchmark problems for wave propagation in elastic materials*. Computational Mechanics, Vol. 43 (2009), pp. 797-814.
36. 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.
37. 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).
38. 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).
39. 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.
40. 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.
41. 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.
42. 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.
43. 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.
44. 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.
45. 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.
46. 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

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.

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. Manservigi, 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, 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 Problems in Science and Engineering, 2017.
2. E. Aulisa, G. Bornia, S. Calandrini, S. *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.
3. 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, Integrability and Quantization, published in Journal of Geometry and Symmetry in Physics, 2016.
4. 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.
5. E. Aulisa, D. Gilliam, T.W. Pathirana. *Analysis of the Error for Harmonic Tracking Using an Iterative Scheme in Geometric Control* (vol. 17). 17th International Conference on Geometry, Integrability and Quantization, published in Journal of Geometry and Symmetry in Physics, 2015.
6. 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.
7. 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.
8. 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).
9. 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).
10. S. Bnà, S. Manservigi, 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).
11. 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
12. 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.

13. 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).
14. 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.
15. 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).
16. 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).
17. 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).
18. 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).
19. 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).
20. 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).
21. 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).
22. 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).
23. 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).
24. 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).
25. 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. Manservigi, 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. Manservigi, 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, L.Bloshanskaya, A.Ibragimov, *On the Well Productivity Index for Compressible Fluids*. Submitted to Evolution Equations and Control Theory (EECT), 2015

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. Pathiranaige. Varna, Bulgaria, June 5-10, 2015.

Conference presentations

1. 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. Pathiranaige*. San Antonio TX, January 10-13 2015.
2. 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. Pathiranaige*. Houston, March 28-29, 2015.
3. 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.
4. Joint Mathematics Meetings 2014, *A multilevel domain decomposition algorithm using the hierarchical element structure*. E. Aulisa, J. Gunatilake*. Baltimore MD, USA, January 15, 2014.
5. SIAM Conference on Mathematical & Computational Issues in the Geosciences, *Up-scaling of Fine Scale Geological Models for Non-Linear Flow Simulations*, E. Aulisa*, L. Bloshanskaya, Y. Efendiev, A. Ibragimov, SIAM, Padova, Italy, June 16, 2013.
6. 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.
7. 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.
8. 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.
9. 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.

10. 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.
11. 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.
12. 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.
13. 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*.
14. 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*.
15. 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*.
16. 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.
17. Seventh AIMS International Conference on Dynamical Systems. *Non-linear Flows and Steady State Invariants in Porous media.* Arlington, Texas May, 2008. E. Aulisa, A. Cakmak*, A. Ibragimov.
18. 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.
19. 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.
20. ECCM 2006, *A Multilevel Domain Decomposition Methodology for Solving Coupled Problems in Fluid-Structure-Thermal Interaction.* Lisbon, Portugal, June 2006. E. Aulisa*, S. Manservigi, P. Seshaiyer.

Invited talk

1. *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*.
2. *Non-linear Flows in porous media and application to multi-phase filtration*, ICES, University of Texas, Austin, March 2008. E. Aulisa*.

Colloquia

1. *Non-linear Problems in Hydrodynamics and Applications.* Texas Tech University, Department of Mathematics and Statistics, E. Aulisa*, September 2011.
2. *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.

FUNDING

External Applications, Accepted

1. *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.
2. *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.
3. *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.
4. *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.
5. *NSF-DMS 0610026: Mathematical and Computational Modeling of Fluid-Structure-Control Interactions with Multidisciplinary Applications in Science and Engineering*, E. Aulisa (Senior Personnel), S. Manservigi (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.
6. *American Turbine 103284 :Data analysis of hydraulic pump efficiency*, E. Aulisa (PI). Total requested: \$7,000, Total received \$7,000, Period: 2008-2009.

SERVICE

Departmental Service

- 2017-today, *Dr. Wei Guo* faculty mentor.
- 2016-today, *Graduate Committee* member.
- 2015-today, *TTU SIAM Chapter* faculty advisor .

- 2013-today, *Dr. Giorgio Borgia* faculty mentor.
- 2016-today, *Graduate Committee* member.
- 2011-today, served 8 times as the *Calculus III with Applications* course coordinator.
- 2009-today, *Departmental Fall Party*, host and organizer.
- 2007-today, co-organizer of the *Applied Mathematics Seminar*.
- 2017, *West Texas Applied Math Graduate Minisymposium*, 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*.
- 2007-today, member of the *Emmy Noether Day Committee* for the organization of the 6th-to-14th Emmy Noether High School Mathematics Days, Dep. Mat.&Stat, TTU.
- 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*.
- 2007-today, class observation and evaluation of 10 teaching assistants.

University Service

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

Service to the Profession

Served as a member of the Editorial Board for

- the Conference Proceedings, Civil-Comp Press, PARENG 2017,
- the Conference Proceedings, Civil-Comp Press, PARENG 2015,
- the Conference Proceedings, Civil-Comp Press, PARENG 2013,
- the Conference Proceedings, Civil-Comp Press, PARENG 2011,
- First International Conference on Parallel, Distributed and Grid Computing for Engineering, Pecs, Hungary, April 2009.

Reviewer

Served as a referee for

- Computer & Fluids
- Transactions on Mechatronics
- the International Journal for Numerical Methods in Fluids,
- the Journal of Biological Dynamics,
- the International Journal of Advances in Engineering Software,
- the Journal of Computational Physics,
- International Journal for Numerical Methods in Fluids

- the Journal of Computational Methods in Sciences and Engineering (JCMSE),
- the conference Proceedings of NOLCOS 2016, 10th IFAC Symposium on Nonlinear Control Systems. (2016).
- 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).