

**Education**

## PH.D. IN MATHEMATICS

University of California, San Diego, 1996–2001. Advisor: Michael Holst.

## M.S. IN MATHEMATICS

University of California, Irvine, 1994–1996.

## B.S. IN MATHEMATICS (Double major)

Middle East Technical University (METU), Ankara, Turkey, 1991–1993.

## B.S. IN SCIENCE EDUCATION, MATHEMATICS TEACHING

METU, Ankara, Turkey, 1989–1993.

**Academic Experience*****Texas A&M University-San Antonio***

Associate Professor, Math Program Coordinator      Dept of Comput, Eng, and Math Sci      2021–present

***U.S. Army Research Laboratory***

ORAU Senior Fellow      Aberdeen Proving Ground      2017–2020

***Wayne State University***

Adjunct Faculty      Dept of Mathematics      2014–2020

***TOBB University of Econ and Tech (ETU)***

Associate Professor      Dept of Mathematics      2011–2016

Assistant Professor      Dept of Mathematics      2010–2011

***Louisiana State University (LSU)***

Visiting Assistant Professor      Dept of Mathematics      2010–2014

Assistant Professor      Dept of Mathematics      2005–2010

Assistant Professor      Center for Comput and Tech      2005–2010

***The University of Texas at Austin***

Postdoctoral Fellow      Inst for Comput Eng and Sci      2003–2005

***California Institute of Technology***

Postdoctoral Scholar      Dept of Computer Sci      2001–2003

***University of California, San Diego***

Postdoctoral Scholar      Dept of Biochemistry      2001–2001

## TEACHING AND MENTORING

### Awards

- Recipient of the A&M-SA College of Arts and Sciences Outstanding Faculty Award of Excellence in Teaching, 2022.

### A&M-SA Teaching Professional Development

- Earned the 25-module ACUE Certification in Effective College Instruction, F2022-S2023.
- Completed the Math Faculty Professional Development, a series of four workshops, S2024.

### Field Trips Organized

Southwest Research Institute (SwRI), San Antonio, TX, 10.06.22 and 11.08.23. The students toured the facility and explored internship opportunities. I gave a colloquium with examples of my past collaborations with students. Dr. James Walker, director of the Engineering Dynamics Dept, gave a presentation with emphasis on internships at SwRI.

### A&M-SA Teaching History

MATH 3340	Linear Algebra with Applications	S2024
MATH 3320	Differential Equations	S2024
MATH 3340	Linear Algebra with Applications	F2023
MATH 2313	Calculus I	F2023
MATH 3320	Differential Equations	S2023
MATH 3340	Linear Algebra with Applications	S2023
MATH 4390	Advanced Topics in Mathematics	S2023
MATH 4374	Numerical Analysis	F2022
MATH 3340	Linear Algebra with Applications	F2022
MATH 3340	Linear Algebra with Applications	S2022
MATH 2313	Calculus I	S2022
MATH 2313	Calculus I	F2021
MATH 2313	Calculus I	F2021
MATH 2314	Calculus II	S2021

## ETU Teaching History

Mat 102	Calculus II	Smr2016
Mat 495	Project I	Smr2016
Mat 499	Undergraduate Research Topics	Smr2016
Mat 112	Analytic Geometry	S2016
Mat 395	Numerical Analysis	S2016
Mat 496	Project II	S2016
Mat 112	Analytic Geometry	S2015
Mat 101	Calculus I	S2015
Mat 496	Project II	S2015
Mat 521	Graduate Numerical Analysis	F2014
Mat 101	Calculus I	F2014
Mat 562	Graduate Numerical Linear Algebra	Smr2014
Mat 102	Calculus II	Smr2014
Mat 495	Project I	Smr2014
Mat 521	Graduate Numerical Analysis	F2013
Mat 202	Ordinary Differential Equations	F2013
Mat 201	Linear Algebra	Smr2013
Mat 495	Project II	S2013
Mat 561	Graduate Topics in Scientific Computing	S2013
Mat 112	Analytic Geometry	S2013
Mat 102	Calculus II	S2013
Mat 666	Graduate Theoretical Foundations of FEM	F2012
Mat 215	Ordinary Differential Equations	F2012
Mat 562	Graduate Numerical Linear Algebra	S2012
Mat 112	Analytic Geometry	S2012
Mat 496	Project II	S2012
Mat 521	Graduate Numerical Analysis	F2011
Mat 215	Ordinary Differential Equations	F2011
Mat 495	Project I	F2011
Mat 395	Numerical Analysis	S2011
Mat 496	Project II	S2011
Mat 102	Calculus II	S2011
Mat 495	Project I	F2010
Mat 101	Calculus I	F2010

## LSU Teaching History

Math 1550	Analytic Geometry and Calculus I	S2010
Math 4004	Mathematics Education Capstone Course	S2009
Math 4038	Mathematics Methods in Engineering	S2009
Math 4004	Mathematics Education Capstone Course	S2008
Math 4153	Finite Dimensional Vector Spaces	S2007
Math 4004	Mathematics Education Capstone Course	S2007
Math 7390-2	Graduate Scientific Computing	F2006
Math 4066	Numerical Analysis II	S2006
Math 4065	Numerical Analysis I	F2005

## Postdoc Mentored, Dissertation and Thesis Directed

5. Dr. Shang-Huan Chiu; Postdoctoral Fellow, Texas A&M University-San Antonio, **co-mentor** with Kun Gou, 2022.
4. Adem Kaya; PhD, Mathematics, Izmir Institute of Technology, **co-advisor**, graduation date: July 2018, *Numerical methods for nonlocal problems*.
3. Orsan Kilicer; MSc, Mathematics, TOBB University of Economics and Technology, **advisor**, graduation date: September 2015, *Extension of nonlocal problems with local boundary conditions from 1 dimension to 2 and 3 dimensions*.
2. Zuhul Unlu; PhD, Mathematics, Louisiana State University, **advisor**, graduation date: August 2014, *Robust preconditioners for the high-contrast elliptic partial differential equations*.
1. Furkan Erden; MSc, Mathematics, TOBB University of Economics and Technology, **advisor**, graduation date: September 2014, *The role of subdomain size in the condition number of nonlocal problems*.

## Dissertation and Thesis Committee Member

6. Yunus Emre Muslubas; MS, Aerospace Engineering, Middle East Technical University, committee member, graduation date: October 2015, advisor: Sinan Eyi, *Choice and development of a preconditioner for Newton-GMRES algorithm*.
5. Hamide Hande Keskiner; MS, Computer Engineering, Middle East Technical University, committee member, graduation date: September 2015, advisor: Murat Manguoglu, *Improved physarum polycephalum shortest path algorithm with preconditioned iterative methods*.
4. Bengisen Pekmen; PhD, Mathematics, Middle East Technical University, committee member, graduation date: March 2014, advisor: Munevver Tezer-Sezgin, *DRBEM applications in fluid dynamics problems and DQM solutions of hyperbolic equations*.
3. Sevtap Ozisik; PhD, Mathematics, Middle East Technical University, committee member, graduation date: February 2012, advisors: Songul Kaya Merdan and Beatrice Riviere, Rice University, *Fully computable convergence analysis of discontinuous Galerkin finite element approximation with an arbitrary number of levels of hanging nodes*.

2. Irina Craciun; undergraduate, Mathematics, Louisiana State University, Mathematics, advisor, graduated in S2008 receiving top undergraduate award, Senior Mathematics Award. She presented her work at Louisiana Academy of Sciences and Sandia National Labs.
1. Ernst Nils Dorband; PhD, Physics and Astronomy, Louisiana State University, committee member, graduation date: May 2007, advisor: Manuel Tiglio, *Computing and analyzing gravitational radiation in black hole simulations using a new multi-block approach to numerical relativity*.

## RESEARCH

### Awards

- Recipient of the DOE Oak Ridge Associated Universities (ORAU) senior fellowship, U.S. Army Research Laboratory, Aberdeen Proving Ground, 2017.
- Recipient of the University of Texas at Austin ICES postdoctoral fellowship, 2003.
- Recipient of the Burroughs Wellcome Fund interdisciplinary La Jolla Interfaces in Science predoctoral fellowship, 1999.
- Recipient of the Ministry of Education Overseas Higher Education Scholarship given only to 2 students nationwide by the Turkish Government to pursue doctoral studies abroad, 1994.

### Research Area

Numerical analysis, scientific computing, numerical linear algebra.

**Focus:** Nonlocal problems, peridynamics, local boundary conditions for nonlocal problems, preconditioning for peridynamics, scalable solvers for nonlocal problems.

Preconditioning, iterative solvers, numerical solutions to partial differential equations, multilevel preconditioning, multigrid, preconditioning under adaptive mesh refinement, robust preconditioning for high-contrast heterogeneous media, Krylov subspace solvers.

**Application areas:** Biophysics, computer graphics, geosciences, numerical relativity, solid and fluid mechanics.

### Publications

\* corresponding author, † student co-author

### Refereed Journal Articles

- B. Aksoylu\***, F. Celiker, and P. Diehl *Analysis and implementation of nonlocal governing operators with local boundary conditions on a general domain*, Journal of Peridynamics and Nonlocal Modeling, (2024), in press, [doi](#).
- B. Aksoylu\***, F. Celiker, and P. Diehl *Construction of nonlocal governing operators with local boundary conditions on a general domain*, Journal of Peridynamics and Nonlocal Modeling, (2024), in press, [doi](#).

- G.A. Gazonas\*, **B. Aksoylu**, and R.A. Wildman, *Fast Fourier transform-based solutions of initial value problems for wave propagation in microelastic media*, Journal of Mechanics of Materials and Structures, 1 (2023), pp.61–89, [doi](#).
- B. Aksoylu**\* and F. Celiker, *A numerical study of the Peridynamic Differential Operator discretization of incompressible Navier-Stokes problems*, Journal of Peridynamics and Nonlocal Modeling, (2023), [doi](#).
- B. Aksoylu**\*, *On four mutual properties of classical and nonlocal wave equations*, Journal of Peridynamics and Nonlocal Modeling, 5 (2023), pp.60–80, [doi](#).
- S. Pawar<sup>†</sup>, O. San\*, **B. Aksoylu**, A. Rasheed, and T. Kvamsdal, *Physics guided machine learning using simplified theories*, Physics of Fluids, 33 (2021), 011701, [doi](#).
- B. Aksoylu**\* and G.A. Gazonas, *On the choice of kernel function in nonlocal wave propagation*, Journal of Peridynamics and Nonlocal Modeling, 2 (2020), pp. 379-400, [doi](#).
- B. Aksoylu**\* and G.A. Gazonas, *On inhomogeneous local boundary conditions in nonlocal problems*, Journal of Peridynamics and Nonlocal Modeling, 2 (2020), pp. 1-25, [doi](#).
- B. Aksoylu**\*, F. Celiker, and G.A. Gazonas, *Higher order collocation methods for nonlocal problems and their asymptotic compatibility*, Communications on Applied Mathematics and Computation, 2(2) (2020), pp. 261-303, [doi](#).
- B. Aksoylu**\* and A. Kaya, *On smoothers for multigrid of the second kind*, Numerical Linear Algebra with Applications, 26(6) (2019), e2267, [doi](#).
- B. Aksoylu**\*, F. Celiker, and O. Kilicer<sup>†</sup>, *Nonlocal problems with local boundary conditions in higher dimensions*, Advances in Computational Mathematics, 45 (2019), pp. 453-492, [doi](#).
- B. Aksoylu**\* and Adem Kaya<sup>†</sup>, *Conditioning and error analysis of nonlocal problems with local boundary conditions*, Journal of Computational and Applied Mathematics, 335 (2018), pp. 1-19, [doi](#).
- B. Aksoylu**\* and F. Celiker, *Nonlocal problems with local Dirichlet and Neumann boundary conditions*, Journal of Mechanics of Materials and Structures, 12(4) (2017), pp. 425-437, [doi](#).
- B. Aksoylu**\*, H.R. Beyer and F. Celiker, *Application and implementation of incorporating local boundary conditions into nonlocal problems*, Numerical Functional Analysis and Optimization, 38(9) (2017), pp. 1077-1114, [doi](#).
- B. Aksoylu**\*, H.R. Beyer and F. Celiker, *Theoretical foundations of incorporating local boundary conditions into nonlocal problems*, Reports on Mathematical Physics, 40(1) (2017), pp. 39-71, [doi](#).
- H.R. Beyer\*, **B. Aksoylu** and F. Celiker, *On a class of nonlocal wave equations from applications*, Journal of Mathematical Physics, 57(6) (2016), 062902, [doi](#).
- B. Aksoylu**\* and Z. Unlu<sup>†</sup>, *Conditioning analysis of nonlocal integral operators in fractional Sobolev spaces*, SIAM Journal on Numerical Analysis, 52 (2014), pp. 653–677, [doi](#).
- B. Aksoylu**\* and Z. Unlu<sup>†</sup>, *Robust preconditioners for the high-contrast Stokes equation*, Journal of Computational and Applied Mathematics, 259 (2014), pp. 944–954, [doi](#).

- B. Aksoylu**, S. Bond\*, E. Cyr, and M. Holst, *Goal-oriented error estimation and multilevel preconditioning for the Poisson-Boltzmann equation*, Journal of Scientific Computing, 52 (2012), pp. 202–225, doi.
- B. Aksoylu** and M.L. Parks\*, *Variational theory and domain decomposition for nonlocal problems*, Applied Mathematics and Computation, 217 (2011), pp. 6498–6515, doi.
- B. Aksoylu\*** and Z. Yeter†, *Robust multigrid preconditioners for the high-contrast biharmonic plate equation*, Numerical Linear Algebra with Applications, 18 (2011), pp. 733–750, doi.
- B. Aksoylu\*** and T. Mengesha, *Results on nonlocal boundary value problems*, Numerical Functional Analysis and Optimization, 31 (2010), pp. 1301–1317, doi.
- B. Aksoylu\*** and Z. Yeter†, *Robust multigrid preconditioners for cell-centered finite volume discretization of the high-contrast diffusion equation*, Computing and Visualization in Science, 13 (2010), pp. 229–245, doi.
- B. Aksoylu\*** and H.R. Beyer, *Results on the diffusion equation with rough coefficients*, SIAM Journal on Mathematical Analysis, 42 (2010), pp. 406–426, doi.
- B. Aksoylu\*** and H.R. Beyer, *On the characterization of asymptotic cases of the diffusion equation with rough coefficients and applications to preconditioning*, Numerical Functional Analysis and Optimization, 30 (2009), pp. 405–420, doi.
- O. Korobkin\*†, **B. Aksoylu**, M. Holst, E. Pazos, and M. Tiglio, *Solving the Einstein constraint equations on multi-block triangulations using finite element methods*, Classical Quantum Gravity, 26 (2009) p.145007(28 pp.), doi.
- B. Aksoylu** and H. Klie\*, *A family of physics-based preconditioners for solving elliptic equations on highly heterogeneous media*, Applied Numerical Mathematics, 59 (2009), pp. 1159–1186, doi.
- B. Aksoylu**, I.G. Graham\*, H. Klie, and R. Scheichl, *Towards a rigorously justified algebraic preconditioner for high-contrast diffusion problems*, Computing and Visualization in Science, 11 (2008) pp. 319–331, doi.
- B. Aksoylu\*** and M. Holst, *Optimality of multilevel preconditioners for local mesh refinement in three dimensions*, SIAM Journal on Numerical Analysis, 44 (2006), pp. 1005–1025, doi.
- B. Aksoylu\***, A. Khodakovsky, and P. Schröder, *Multilevel solvers for unstructured surface meshes*, SIAM Journal on Scientific Computing, 26 (2005), pp. 1146–1165, doi.
- B. Aksoylu\***, S. Bond, and M. Holst, *An odyssey into local refinement and multilevel preconditioning III: Implementation and numerical experiments*, SIAM Journal on Scientific Computing, 25 (2003), pp. 478–498, doi.

## Book Chapters and Conference Proceedings

- B. Aksoylu\***, F. Celiker, and O. Kilicer†, *Nonlocal problems with local boundary conditions: An overview*, Handbook of Nonlocal Continuum Mechanics for Materials and Structures, Voyiadjis G. (eds), (2019), pp. 1293–1330, Springer, Cham, doi.
- B. Aksoylu** and G.A. Gazonas, *Inhomogeneous local boundary conditions in nonlocal problems*, Proceedings of European Congress on Comput Meth in Applied Sci and Eng ECCOMAS2018, (2018), Glasgow, UK.

- B. Aksoylu\*** and F. Celiker, *Comparison of nonlocal operators utilizing perturbation analysis*, Springer Lecture Notes in Computational Science and Engineering, Proceedings of the European Numerical Mathematics and Advanced Applications ENUMATH 2015, B. Karasozen et al. (Eds.), 112, (2016), pp. 589–606, [doi](#).
- B. Aksoylu\*** and Z. Unlu<sup>†</sup>, *Numerical study of the high-contrast Stokes equation and its robust preconditioning*, *Advances in Applied Mathematics and Approximation Theory*, Contributions from AMAT2012, Springer Proceedings in Mathematics & Statistics, G.A. Anastassiou and D. Oktay (Eds.), 41, (2013), pp. 237–262, [doi](#).
- B. Aksoylu**, T. Mengesha, and M.L. Parks, *Variational Theory and Domain Decomposition for Non-local Problems*, Extended abstract for 11th US National Congress on Computational Mechanics USNCCM2011, July 25-28, 2011.
- B. Aksoylu**, I.G. Graham, H. Klie, and R. Scheichl, *A rigorously justified robust algebraic preconditioner for high-contrast diffusion problems*, Extended abstract, Proceedings of European Congress on Comput Meth in Applied Sci and Eng ECCOMAS2008, (2008), Venice, Italy.
- B. Aksoylu\*** and H. Klie, *Physics-based preconditioners for solving PDEs on highly heterogeneous media*, Proceedings of ICIAM 2007, Proc. Appl. Math. Mech. 7 (2007), pp. 1020703-1020704, [doi](#).

#### Selected Technical Reports and Miscellanea

- G.A. Gazonas, **B. Aksoylu**, and R.A. Wildman, *Fast solution of initial value problems for wave propagation in Peridynamic media*, tech. rep., ARL-TR-9537, (2022), [doi](#).
- B. Aksoylu**, D. Bernstein, S.D. Bond, and M. Holst, *Generating Initial Data in General Relativity Using Adaptive Finite Element Methods*, tech. rep., LSU CCT-TR-2008-9, (2008), arXiv 0801.3142.
- B. Aksoylu**, H. Klie, and M.F. Wheeler, *Physics-based preconditioners for porous media flow applications*, tech. rep., UT-Austin ICES Report 07-08, (2007).
- B. Aksoylu** and M. Holst, *An odyssey into local refinement and multilevel preconditioning II: Stabilizing hierarchical basis methods*, tech. rep., UT-Austin ICES Report 05-04, (2005).
- B. Aksoylu** and M. Holst, *An odyssey into local refinement and multilevel preconditioning I: Optimality of the BPX preconditioner*, tech. rep., UT-Austin ICES Report 05-03, (2005).
- B. Aksoylu**, M. Holst, and S. Bond, *Implementation and theoretical aspects of the BPX preconditioner in the three dimensional local mesh refinement setting*, tech. rep., UT-Austin ICES Report 04-50, (2004).
- B. Aksoylu**, *Adaptive multilevel numerical methods with applications in diffusive biomolecular reactions*, Ph.D. Dissertation, Department of Mathematics, Computational and Applied Mathematics Group, University of California, San Diego, (2001).
- N.A. Baker, M.J. Holst, **B. Aksoylu**, R.E. Bank, J.A. McCammon, D. Sept, and F. Wang, *Toward Computational Cell Biology*, San Diego Supercomputer Center quarterly publication, *EnVision*, Vol. 16, No. 3, (2000).

## Funded Projects, Total \$980,000

14. Research Partnerships in Artificial Intelligence, Pacific Northwest National Lab & A&M University System, selected for the partnership and presented, 11.07.23.
13. A&M-SA, College of Arts and Sciences, College Grant, 11.30.2022–08.31.2023, PI: Burak Aksoylu, **single investigator**, \$10,000.
12. A&M-SA, Department of Mathematical, Physical, Engineering Sciences, Mathematical Postdoctoral Fellowship Funding, 09.01.2021–08.31.2022, PI: Burak Aksoylu, co-PI: Kun Gou, \$45,000.
11. Scientific and Technological Research Council of Turkey (TUBITAK) 1001 program, MFAG 115F473, *Local boundary conditions in nonlocal theories*, 04.15.2016–04.14.2019, PI: Burak Aksoylu, **single investigator**, Amount: 254,250 TL.
10. Scientific and Technological Research Council of Turkey (TUBITAK) 2221, Fellowship for scientist on sabbatical leave program, 02.20.2014–08.20.2014, host scientist: Burak Aksoylu, visiting scientist: Prof. Fatih Celiker of Wayne State University, Department of Mathematics, Amount: 42,200 TL.
9. Scientific and Technological Research Council of Turkey (TUBITAK) 2221, Fellowship for visiting scientist program, 09.09.2013–03.09.2014 and 06.01.2014–12.01.2014, host scientist: Burak Aksoylu, visiting scientist: Prof. Horst R. Beyer of Eberhard Karls Universität Tübingen, Theoretical Astrophysics, Amount: 72,000 TL.
8. Scientific and Technological Research Council of Turkey (TUBITAK) 1001 program, MAG 112M891, *Development of a method to predict strength and failure of layered composites using peridynamic theory*, 05.01.2013–04.30.2015, PI: Mehmet Ali Guler, Co-PI: Burak Aksoylu, Amount: 255,070 TL.
7. Scientific and Technological Research Council of Turkey (TUBITAK) 1001 program, TBAG 112T240, *Solvers for peridynamics applications*, 12.01.2012–11.30.2014, PI: Burak Aksoylu, **single investigator**, Amount: 146,073 TL.
6. European Commission Marie Curie Career Integration Grant 293978, *Numerical methods for non-local problems*, 09.12.2011–09.11.2015, PI: Burak Aksoylu, **single investigator**, Amount: 100,000 Euro.
5. NSF DMS 1016190, *Numerical methods for heterogeneity and nonlocality*, 08.15.2010–07.31.2014, PI: Burak Aksoylu, **single investigator**, Amount: 180,000 USD.
4. NSF CNS 0540374, *DDDAS-TMPR: DynaCode: A general DDDAS framework with coast and environment modeling applications*, 01.01.2006–12.31.2006, PI: Gabrielle Allen, Co-PIs: Burak Aksoylu, Ivor van Heerden, Gregory Stone Joannes Westerink, Amount: 220,000 USD.
3. NSF LA EPSCoR, *High performance solvers for atomistic-to-continuum modeling*, extended stay at Sandia National Laboratories, summer 2008, PI: Burak Aksoylu, Amount: 3,000 USD.
2. LSU CCT Focus Areas Grant, *Utilizing pseudospectral tools to analyze stability of evolution equations*, 01.01.2007–05.31.2007, PI: Manuel Tiglio, Co-PI: Burak Aksoylu, Amount: 10,000 USD.
1. LSU CCT General Development Program, *Interplay between finite element method and evolution of Einstein's equations*, 01.01.2006–06.30.2007, PI: Burak Aksoylu, Co-PI: Manuel Tiglio, Amount: 40,000 USD.

## Conference Organization

7. Member of Scientific Committee, Quarter Century of Peridynamics, US Association for Computational Mechanics Thematic Conference, Tucson, AZ, 04.23-25.2024.
6. Minisymposium organizer, 5th Annual Meeting of the SIAM TX-LA Section, Houston, TX, 11.06.2022.
5. Minisymposium organizer, European Conference on Numerical Mathematics and Advanced Applications ENUMATH2015, Ankara, Turkey, 09.14.2015.
4. Local organizing committee member, International Conference on Applied Mathematics and Approximation Theory AMAT2012, Ankara, Turkey, 05.17-20.2012.
3. Minisymposium organizer, 7th International Congress on Industrial and Applied Mathematics ICIAM2011, Vancouver, British Columbia, 07.18-22.2011.
2. Minisymposium organizer, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania, 05.23-26.2010.
1. Minisymposium organizer, SIAM Conference of Mathematical and Computational Issues in the Geosciences, Avignon, France, 06.09.2005.

## Long Term Research Visits

7. Participant, Oberwolfach Workshop 2402, Fracture as an Emergent Phenomenon, Mathematisches Forschungsinstitut Oberwolfach, Germany, 01.07-12.2024.
6. Visiting Scientist (paid), Aerospace Structure Research Group, Department of Industrial Engineering, University of Padua, Italy, four weeks (virtual), July 2021.
5. Computational Mathematics Group, Sandia National Laboratories, Albuquerque, New Mexico, one week, November 2014.
4. Department of Mathematics, Louisiana State University, Baton Rouge, Louisiana, five weeks, the summer of 2011.
3. Applied Mathematics and Applications Group, Sandia National Laboratories, Albuquerque, New Mexico, one week, the summer of 2011.
2. Applied Mathematics and Applications Group, Sandia National Laboratories, Albuquerque, New Mexico, seven weeks, the summer of 2009.
1. Applied Mathematics and Applications Group, Sandia National Laboratories, Albuquerque, New Mexico, six weeks, the summer of 2008.

## Plenary Presentations

2. Plenary talk, [European Conference on Numerical Mathematics and Advanced Applications ENUMATH2015](#), Ankara, Turkey, 09.15.2015.
1. Plenary talk, Workshop on Numerical Methods for Differential Equations, Izmir Institute of Technology, Izmir, Turkey, 05.12.2006.

## Invited Workshop Presentations

4. Workshop presentation, Workshop on Nonlocal Models in Mathematics, Computation, Science, and Engineering, Oak Ridge National Laboratory, Oak Ridge, Tennessee, 10.26-28.2015.
3. Summer program presentation, Statistical and Applied Mathematical Sciences Institute (SAMSI), Summer Program on Nonlocal Continuum Models for Diffusion, Mechanics, and Other Applications, Research Triangle Park, North Carolina, 06.25-29.2012.
2. Workshop presentation, Workshop on FEM and BEM, Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, 05.26.2012.
1. Workshop presentation, Workshop on Peridynamics, Dissipative Particle Dynamics and the Mori-Zwanzig Formulation, Division of Applied Mathematics, Brown University, Providence, Rhode Island, 04.10-11.2012.

## Invited Oral Presentations

56. Minisymposium presentation, Quarter Century of Peridynamics, US Association for Computational Mechanics Thematic Conference, Tucson, AZ, 04.23.2024.
55. Seminar talk, Southwest Research Institute, Engineering Dynamics Department, San Antonio, TX, 11.08.2023.
54. Research presentation (virtual), Research Partnerships in Artificial Intelligence between the Pacific Northwest National Lab and the Texas A&M University System, 11.07.23.
53. Minisymposium presentation (virtual), 10th International Congress on Industrial and Applied Mathematics ICIAM2023, Tokyo, Japan, 08.22.2023.
52. Minisymposium presentation, 17th US National Congress on Computational Mechanics, Albuquerque, New Mexico, 07.24.2023.
51. Minisymposium presentation, 5th Annual Meeting of the SIAM TX-LA Section, Houston, TX, 11.06.2022.
50. Symposium presentation, Society of Engineering Science Annual Technical Meeting, College Station, TX, 10.17.2022.
49. Colloquium talk, Southwest Research Institute, Engineering Dynamics Department, San Antonio, TX, 10.06.2022.
48. Minisymposium presentation, 19th U.S. National Congress on Theoretical and Applied Mechanics, Austin, TX, 06.21.2022.
47. Minisymposium presentation, 16th US National Congress on Computational Mechanics (virtual meeting), Austin, Texas, 07.26.2021.
46. Colloquium talk (virtual), Aerospace Structure Research Group, University of Padua, Padua, Italy, 07.22.2021.
45. Colloquium talk (virtual), Aerospace Structure Research Group, University of Padua, Padua, Italy, 07.15.2021.

44. Minisymposium presentation (virtual), 14th World Congress in Computational Mechanics and ECCOMAS Congress, Paris France, 01.11.2021.
43. Minisymposium presentation (virtual), 3rd Annual Meeting of the SIAM Texas-Louisiana Section, College Station, Texas, 10.17.2020.
42. Colloquium talk, Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, New Mexico, 11.13.2019.
41. Seminar talk, Computational and Applied Mathematics Group, Oak Ridge National Laboratory, Oak Ridge, Tennessee, 08.29.2019.
40. Minisymposium presentation, 15th US National Congress on Computational Mechanics, Austin, Texas, 08.01.2019.
39. Minisymposium presentation, 9th International Congress on Industrial and Applied Mathematics ICIAM2019, Valencia, Spain, 07.17.2019.
38. Minisymposium presentation, 13th World Congress in Computational Mechanics, New York City, New York, 07.25.2018.
37. Minisymposium presentation, 6th European Conference on Computational Mechanics (ECCM 6) and 7th European Conference on Computational Fluid Dynamics (ECFD 7), (ECCOMAS2018), Glasgow, UK, 06.13.2018,
36. Seminar talk, Department of Mathematics, Wayne State University, Detroit, Michigan, 02.20.2017.
35. Seminar talk, U.S. Army Research Laboratory, Aberdeen Proving Ground, Maryland, 12.08.2016.
34. Colloquium talk, Department of Mathematics, University of Maryland at College Park, College Park, Maryland, 11.03.2015.
33. Seminar talk, Department of Mathematics, Wayne State University, Detroit, Michigan, 11.02.2015.
32. Minisymposium presentation, European Conference on Numerical Mathematics and Advanced Applications ENUMATH2015, Ankara, Turkey, 09.14.2015.
31. Minisymposium presentation, 8th International Congress on Industrial and Applied Mathematics ICIAM2015, Beijing, China, 08.11.2015.
30. Seminar talk, Institute for Numerical Simulation, Universitaet Bonn, Bonn, Germany, 04.14.2015.
29. Seminar talk, Computational Mathematics Group, Sandia National Laboratories, Albuquerque, New Mexico, 11.17.2014.
28. Minisymposium presentation, SIAM Conference on Analysis of Partial Differential Equations, Orlando, Florida, 12.08.2013.
27. Seminar talk, Department of Mathematics, Wayne State University, Detroit, Michigan, 07.03.2013.
26. Minisymposium presentation, [SIAM Conference on Mathematical Aspects of Materials Science](#), Philadelphia, Pennsylvania, 06.11.2013.
25. Seminar talk, Mathematisches Institut, Tübingen, Tübingen, Germany, 11.02.2012.

24. Seminar talk, Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, 05.22.2012.
23. Seminar talk, Department of Mathematics, Istanbul Technical University, Istanbul, Turkey, 08.24.2011.
22. Minisymposium presentation, 11th US National Congress on Computational Mechanics, Minneapolis, Minnesota, 07.26.2011.
21. Minisymposium presentation, 7th International Congress on Industrial and Applied Mathematics ICIAM2011, Vancouver, British Columbia, 07.20.2011.
20. Colloquium talk, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, 07.14.2011.
19. Seminar talk, Department of Mathematics, Middle East Technical University, Ankara, Turkey, 03.03.2011.
18. Minisymposium presentation, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania, 05.24.2010.
17. Colloquium talk, Faculty of Engineering and Natural Sciences, Sabanci University, Istanbul, Turkey, 05.07.2010.
16. Colloquium talk, Department of Mathematics and Computer Sciences, Bahcesehir University, Istanbul, Turkey, 05.05.2010.
15. Colloquium talk, Department of Mathematics and Statistics, Texas Tech University, Lubbock, Texas, 02.15.2010.
14. Colloquium talk, Department of Mathematics, Washington State University, Pullman, 04.29.2009.
13. Colloquium talk, Science Programs, Washington State University, Vancouver, 04.27.2009.
12. Colloquium talk, Computational Science Program, The University of Texas at El Paso, 02.23.2009.
11. Colloquium talk, Department of Mathematics and Statistics, University of New Mexico, Albuquerque, 02.10.2009.
10. Colloquium talk, Department of Mathematical Sciences, Michigan Technological University, Houghton, 01.26.2009.
9. Seminar talk, Applied Mathematics and Applications Group, Sandia National Laboratories, Albuquerque, New Mexico, 06.11.2008.
8. Seminar talk, Applied Mathematics and Applications Group, Sandia National Laboratories, Albuquerque, New Mexico, 02.04.2008.
7. Colloquium talk, Department of Mathematical and Statistical Sciences, University of Colorado at Denver, 01.28.2008.
6. Seminar talk, Department of Mathematics and Computer Science, Emory University, Atlanta, Georgia, 09.25.2007.
5. Minisymposium presentation, 6th International Congress on Industrial and Applied Mathematics ICIAM2007, Zurich, Switzerland, 07.17.2007.

4. Minisymposium presentation, SIAM Conference of Mathematical and Computational Issues in the Geosciences, Santa Fe, New Mexico, 03.20.2007.
3. Minisymposium presentation, SIAM Conference of Mathematical and Computational Issues in the Geosciences, Avignon, France, 06.09.2005.
2. Colloquium talk, Mathematical Sciences Institute, Australian National University, Canberra, Australia, 07.17.2003.
1. Colloquium talk, School of Mathematics and Statistics, University of New South Wales, Sydney, Australia, 07.03.2003.

### **Invited Industry Oral Presentations**

3. US Air Force Office of Scientific Research, Washington D.C., 06.15.2010.
2. ExxonMobil Corporate Strategic Research, Clinton, New Jersey, 07.02.2009.
1. Object Reservoir, Research and Development Division, Austin, Texas, 01.13.2009.

### **Contributed Presentations**

8. Contributed talk (virtual), 5th Coastal Bend Mathematics and Statistics Conference, A&M-SA, San Antonio, Texas, 04.10.2021.
7. Contributed workshop presentation, 13th International Workshop on Dynamical Systems and Applications IWDSA2014, TOBB University of Economics and Technology, Ankara, Turkey, 06.14.2014.
6. Contributed conference presentation, 9th Ankara Mathematics Days AMG2014, Atilim University, Ankara, Turkey, 06.12–13.2014.
5. Contributed workshop presentation, [Workshop on Nonlocal Models and Peridynamics](#), Technische Universität Berlin, Berlin, Germany, 11.07.2012.
4. Contributed conference presentation, International Conference on Applied Mathematics and Approximation Theory AMAT 2012, TOBB University of Economics and Technology, Ankara, Turkey, 05.19.2012.
3. Contributed conference presentation, Conference on Preconditioning Techniques for Large Sparse Matrix Problems in Scientific and Industrial Applications, Toulouse, France, 07.10.2007.
2. Contributed conference presentation, 5th International Congress on Industrial and Applied Mathematics ICIAM2003, Sydney, Australia, 07.08.2003.
1. Contributed conference presentation, 7th Copper Mountain Conference on Iterative Methods, Copper Mountain, Colorado, 03.29.2002.

### **Non-Invited Scientific Presentations**

8. Poster presentation, A Special Conference: Open Problems in Mathematical and Computational Sciences, Istanbul, Turkey, 09.18–20.2013.

7. Contributed presentation, International Conference on Applied and Computational Mathematics, Middle East Technical University, Ankara, Turkey, 10.05.2012.
6. Contributed presentation, 7th International Congress on Industrial and Applied Mathematics ICIAM2011, Vancouver, British Columbia, 07.18.2011.
5. Applied dynamics research group seminar talk, Department of Mathematics, Middle East Technical University, Ankara, Turkey, 05.06.2011.
4. Seminar talk, Department of Mathematics, TOBB University of Economics and Technology, Ankara, Turkey, 10.22.2010.
3. Colloquium talk, Department of Mathematics, Louisiana State University, Baton Rouge, 01.15.2009.
2. Seminar talk, Department of Mathematics, Louisiana State University, Baton Rouge, 10.01.2007.
1. Contributed talk, Industrial Affiliates Meetings, Center for Subsurface Modeling, The University of Texas at Austin, 10.26.2004.

## SERVICE

### Award Nomination

- Nominated for the College Outstanding Service Award in 05.22 at the tenure-track faculty level by the department chair.

### Service to the University

S2024, A&M-SA Outstanding Senior Award Committee, member.

### Service to the College

S2024, Inaugural ESET Tenure Track Associate/Assistant Professor Hiring Committee, **chair**.

F2022–S2023, CoAS Reorganization Task Force, **co-chair**.

F2022–S2023, CoAS Diversity, Equity, and Inclusion Committee, member.

### Service to the Department

S2023, Math Tenure Track Assistant Professor Hiring Committee, **chair**.

S2022, Temporary Lecturer Hiring Committee, **chair**.

S2022-F2022, Calculus Curriculum Committee, horizontal and vertical integration of Pre-Calculus, Calculus I, II, and III, **co-chair**.

S2021, Postdoc Hiring Committee, **chair**.

F2022–present, A&M-SA Math Program website, **webmaster**.

F2022–present, Math Program Guest Speaker Series, **organizer**.

S2021–present, Future Jaguar Day, every fall and spring, Math Program **recruiter and representative**.

F2022, Faculty Development Sabbatical Leave Committee, member.

S2021–S2023, Faculty Evaluation Committee, alternate member.

S2021–present, Adjunct Faculty Hiring Committee, member.

Su2023, Instructional Assistant Professor Hiring Committee, member.

### **Service to the Profession as Executive and Technical Board Member**

- Member of editorial board, Numerical Methods for Partial Differential Equations, Wiley, 2022–present.
- Member of editorial board, Journal of Peridynamics and Nonlocal Modeling, Springer, 2019–present.
- Member of steering committee, Scientific and Technological Research Council of Turkey, Division for Training of Scientists, 2013–2014.
- Member of editorial board, Bilim ve Teknik (Science and Technology), Turkey’s best selling monthly popular science magazine published by the Scientific and Technological Research Council of Turkey, 2012–2014.

### **Service to the Profession as Research Proposal Panelist and Reviewer**

- US Department of Energy Advanced Scientific Computing Research (ASCR) Early Career review panelist and reviewer (4 times).
- US Department of Energy, Office of Nuclear Energy, Scientific Discovery Through Advanced Computing (SciDAC): Partnership in Nuclear Energy, reviewer.
- Deutsche Forschungsgemeinschaft (German Research Foundation), Mathematics and Engineering Sciences, reviewer.
- American Chemical Society, Petroleum Research Fund, reviewer (2 times).
- National Science Foundation, Mathematical Sciences Postdoctoral Research Fellowships Panel, review panelist.
- National Science Foundation, Numerical Methods with Applications, review panelist.
- National Science Foundation, Computational Mathematics, review panelist (2 times).
- National Science Foundation, Algorithms for Modern Power Systems, review panelist.
- Scientific and Technological Research Council of Turkey, Applied Mathematics, review panelist.

## **Service to the Profession as Technical Paper Reviewer**

20. SIAM Journal on Numerical Analysis.
19. SIAM Journal on Scientific Computing.
18. SIAM Multiscale Modeling and Simulation.
17. AMS Mathematics of Computation.
16. Applied Numerical Mathematics.
15. Computer Methods in Applied Mechanics and Engineering.
14. Journal Peridynamics and Nonlocal Modeling.
13. Numerical Functional Analysis and Optimization.
12. Applied Mathematics and Computation.
11. Computational Methods in Applied Mathematics.
10. Engineering with Computers.
9. Communications in Computational Physics.
8. Turkish Journal of Mathematics.
7. Hacettepe Journal of Mathematics and Statistics.
6. Physics Letters A.
5. Journal of Mathematical Imaging and Vision.
4. Digital Signal Processing.
3. Proceedings of European Conference on Numerical Mathematics and Advanced Applications.
2. Proceedings of the Domain Decomposition Methods Conference.
1. Proceedings 7th IEEE International Symposium on Cluster Computing and the Grid.

## **Service to the Community**

S2024, Alamo Regional Academy of Science and Engineering Fair, judge.

## **Mathematics Program Coordinator Routine Service Activity**

### **Routine Meetings**

- Biweekly with the department chair.
- Weekly with the entry-level mathematics director.

- Monthly meeting with math program faculty. Complete action items, provide guidance to faculty, and provide synchronization with the department.

### **Scheduling and Staffing**

- Course scheduling 3 terms/year with CourseLeaf software; a total of 713 sections so far.
- Implemented a preference system to optimize the course and instructor match, student needs, and the program's efficiency. Collect the preference data every term before course offerings.
- Math program heavily relies on adjunct faculty. Coordinate with the entry-level mathematics director.

### **Reports and Reviews**

- Prepare the annual Institutional Effectiveness Plan and Report for the Math Program. Collect the required data from faculty, prepare the report, and evaluate the effectiveness of the program.
- Academic Program Review. Prepare template for the Math Program and design the review criteria in consultation with faculty.

### **Miscellaneous**

- Future Jaguar Day. Representing the Math Program regularly since S2021. Prepare program handouts, arrange promotional merchandise, set up table, and give recruitment presentation to students.
- Transcript evaluation, equivalency inquiries, transfer questions. Perform this frequent task during the enrollment period due to a large number of incoming transfer students.
- Coordinate with and responding to inquiries from publishers such as McGraw Hill, Pearson, and Cengage.

### **Ad Hoc Service Activity**

- S2022, Reconstructed all three Math Degree Plans.
- S2022-F2022, prepared responses with several faculty for the Texas Education Agency alignment chart for the BS Teacher Certification degree plan. The College of Education is required to provide this comprehensive alignment chart (28 pp.) to make sure that our alumni are eligible to become teachers in Texas.

### **Service Prior to A&M-SA**

F2011–S2016, Graduate Program Committee, ETU Dept of Math, member.

S2011–S2016, Departmental Research Colloquia, ETU Dept of Math, organizer.

F2007–S2008, Undergrad and Grad Competitive Research Program Committee, LSU CCT, **chair**.

F2007–S2010, Undergraduate Advising Committee, LSU Dept of Math, member.

F2005–S2010, Sci Comput and Numer Analysis Undergrad Committee, LSU Dept of Math, member.

F2005–S2006, Postdoctoral recruitment committee, LSU CCT, member.