

Eileen R. Martin

she/her

eileenrmartin@mines.edu

Phone: (303)273-3455

GP Office: 253 Green Center

AMS Office: 234 Chauvenet Hall

<https://eileenrmartin.github.io/>

Academic Appointments

Assistant Professor, Colorado School of Mines, Golden, CO Jan. 2022-present

- Department of Geophysics (60% appointment)
- Applied Math and Statistics Department (40% appointment)
- Hydrologic Science and Engineering Program Faculty

Assistant Professor, Virginia Tech, Blacksburg, VA Aug. 2018 - present

- Department of Mathematics
- Program in Computational Modeling and Data Analytics
- Department of Geosciences, affiliate faculty (Dec. 2019 - present)
- Note: on leave since Jan. 2022

Research Assistant Professor, Colorado School of Mines, Golden, CO Jun.-Dec. 2021
- Unremunerated Appointment in Department of Geophysics

Affiliate, Lawrence Berkeley National Laboratory, Berkeley, CA 2016-2020
- Earth and Environmental Sciences Area, Geophysics Department

Education

Ph.D. Computational and Mathematical Engineering, Stanford University
Dissertation: June 2018
Passive Imaging and Characterization of the Subsurface with Distributed Acoustic Sensing
Readers: Biondo Biondi (advisor), Jonathan Ajo-Franklin, George Papanicolaou

M.S. Geophysics, Stanford University
Masters research presentation: June 2017
Stanford DAS Array: Ambient Noise and Earthquake Recordings
Committee: Biondo Biondi (advisor) and Greg Beroza

B.S. Dean's Scholars Honors Mathematics, University of Texas at Austin
Dean's Honored Graduate, graduated with high honors May 2012
Honors thesis: *Global Coordinate Systems: Continuously Moving Finite-Dimensional Unit Norm Tight Frames on Smooth Manifolds*
Advisor: Daniel Freeman (advisor)

B.S. Computational Physics, University of Texas at Austin
Graduated with high honors May 2012

Honors, Awards, Fellowships

SIAM Activity Group on Geosciences Early Career Prize 2023
NSF CAREER Grant Recipient, NSF Office of Advanced Cyberinfrastructure 2021
Luther and Alice Hamlett Junior Faculty Fellow, Virginia Tech AIS 2019-2022
Gene Golub Dissertation Award, Stanford ICME 2018
Best student poster paper at SEG Annual Meeting, co-author 2017
Schlumberger Innovation Fellowship 2016-2017
DOE Computational Science Graduate Fellowship 2012-2016
Stanford ICME Student Leadership Award 2014
NSF Graduate Research Fellowship Program award offered 2012

Dean's Honored Graduate, UT-Austin College of Natural Sciences
Barry M. Goldwater Scholarship

2012
2011-2012

**External
Funding**

NSF 2148614, Geoinformatics Program

Amount to Colorado School of Mines: \$483,833

Catalytic: Distributed Acoustic Sensing Data Analysis Ecosystem (DASDAE)

PI: E.R. Martin, Co-PI: G. Jin (Mines, Geophysics)

Period of Performance: 7/1/22-6/30/25

Subcontract number 1841, Luna Innovations, Inc. (Prime Sponsor, DOE STTR)

Amount to Colorado School of Mines: \$125,000

Cloud-based Management and Analysis of Large, Complex Distributed Acoustic Sensing Data

PI at Luna: D. Rountree, PI at Mines: E.R. Martin, Co-PI: G. Jin (Mines, Geophysics)

Period of Performance: 2/14/22 - 1/20/23

Subaward 62681767-227888, Stanford University (Prime Sponsor, AFRL)

Amount to Colorado School of Mines: \$196,560

Towards Enhanced Seismic Monitoring with Distributed Acoustic Sensing (DAS)

P.I.: E.R. Martin

Period of Performance: 8/1/21 - 7/31/26

NSF 2046387, Office of Advanced Cyberinfrastructure

Amount: \$398,024 awarded to date (\$509,722 total intended)

CAREER: Scalable Computational Seismology for All

PI: E.R. Martin

Period of Performance: 7/1/21 - 6/30/26

Subcontract 3437-AFR-2S+, Luna Innovations, Inc.

Amount to Virginia Tech: \$187,150

Swift and QUIet Airfield Assessment Device (SQUAAD), Phase II

PI: R. Green (Virginia Tech, Civil & Environmental Engineering), Co-PI: E.R. Martin

Period of Performance: 3/1/21-3/1/23

NSF 2034366, Signals in the Soil Program

Amount to Virginia Tech: \$216,167

SitS: Collaborative Research: Understand and Forecast Long-term Variations of In-situ Geophysical and Geomechanical Characteristics of Degrading Permafrost in the Arctic

PI: M. Xiao (Penn State, Civil & Environmental Engineering), Co-PIs: E.R. Martin, D. Nicolsky (University of Alaska Fairbanks, Geophysical Institute), T. Zhu (Penn State, Geosciences), A. Jensen (University of Alaska Fairbanks, Anthropology)

Period of performance: 1/1/21-12/31/23

DOE DE-FE0091786, Office of Fossil Energy

Amount: \$1,874,999 total = \$1,499,999 DOE + \$375,000 non-DOE

Fully Distributed Acoustic and Magnetic Field Monitoring via a Single Fiber Line for Optimized Production of Unconventional Resource Plays

Lead PI: G. Pickrell (Virginia Tech, Materials Science and Engineering), PIs: L. Ma (Sentek Instrument LLC), E.R. Martin

Period of performance: 10/1/19-6/30/22

MAA Tensor Women and Mathematics Grant

Amount: \$6,000

SURE: Speakers and Undergraduate Research Engagement
 PI: G. Matthews (Virginia Tech, Math), Co-PI: E.R. Martin
 Period of performance: 6/1/21-5/31/22

Subcontract 4000175567, UT-Batelle, LLC for Oak Ridge National Laboratory
 Amount: \$94,985
Fast Comparative Algorithms for Sensor Array Summaries
 PI: E.R. Martin
 Period of Performance: 11/11/19-8/15/21

NSF 1937984, Engineering for Civil Infrastructure program
 Amount: \$157,973
EAGER: Exploration of an Interdisciplinary Approach to Resolving a Critical Issue in Evaluating Liquefaction Hazard of Challenging Soil Sites
 PI: E.R. Martin, Co-PIs: A. Yerro Colom and R. Green (both Virginia Tech Civil & Environmental Engineering)
 Period of Performance: 8/1/19-7/31/22

MAA Tensor Women and Mathematics Grant
 Amount: \$6,000
SURE: Speakers and Undergraduate Research Engagement
 PI: G. Matthews (Virginia Tech Math), Co-PIs: E.R. Martin and L. Zietsman (Virginia Tech Math)
 Period of performance: 6/1/19-5/31/20

DE-SC0019630, DOE Phase I STTR with Luna Innovations
 Amount to Virginia Tech: \$51,433
Advanced Computational Methods Towards High-Resolution Fiber Optic Distributed Acoustic Sensing
 PI: D. Rountree (Luna Innovations), Co-PI: E.R. Martin
 Period of performance: 2/19/19-11/18/19

Internal Funding

Luther and Alice Hamlett Undergraduate Research Support, AIS
 Total amount: \$6,000
Spring 2019: Data compression for next-generation seismic sensor networks
Spring 2020: Footstep removal to protect resident privacy in urban seismology data
Summer 2021: Compression and Data Product Streams in Permafrost Thaw Monitoring
 PI: E.R. Martin
 Period of performance: 1/14/19-6/30/25

Luther and Alice Hamlett Junior Faculty Fellowship, AIS
 Amount varies annually depending on investment fund returns.
 Period of performance: 8/19 - 7/22

Seed Grant from Penn State Institute of Energy and the Environment
 Amount: \$50,000 (at Penn State)
Lighting Up the Subsurface for Tomorrow's City: Initiating a Penn State DAS Array for Mapping Near-Surface Geology
 PI: T. Zhu (Penn State Geosciences), Co-PIs: E.R. Martin, A. Nyblade (Penn State Geosciences), P. Fox (Penn State Civil & Env. Engineering)
 Period of performance: 3/1/19-12/31/19

Publications Under Review

1. X. Ji, M. Xiao, **E.R. Martin**, T. Zhu, 2022, *Statistical Evaluation of Seismic Wave*

- Velocity Models of Permafrost*, under review.
2. J. Kump, **E.R. Martin**, W. Ray, 2021, *Cross-correlations of Wavelet Compressed Data*, under review.
 1. Z.J. Spica, J. Ajo-Franklin, G.C. Beroza, B. Biondi, F. Cheng, B. Gaite, B. Luo, **E.R. Martin**, J. Shen, C. Thurber, L. Viens, H. Wang, A. Wuestefeld, H. Xiao, T. Zhu, 2022, *PubDAS: a PUBLIC Distributed Acoustic Sensing datasets repository for geosciences*, recently accepted by Seismological Research Letters. [Preprint link](#).
 2. J.A. Mjehovich, G. Jin, **E.R. Martin**, J. Shragge, 2022, *Rapid surface-deployment of a DAS system for earthquake hazard assessment*, recently accepted by ASCE Journal of Geotechnical and Geoenvironmental Engineering. [Data link](#).
 3. Z. Hileman, D. Homa, **E.R. Martin**, G. Pickrell, A. Wang, 2022, *Development of a multimaterial optical fiber for fully distributed magnetic sensing applications*, IEEE Sensors Letters, 6(1), pp. 1-4.
 4. K. Yost, A. Yerro, R.A. Green, **E.R. Martin**, J. Cooper, 2022, *MPM Modeling of Cone Penetrometer Testing for Multiple Thin-Layer Effects in Complex Soil Stratigraphy*, Journal of Geotechnical and Geoenvironmental Engineering, 148(2), 04021189.
 5. J. Cooper, **E.R. Martin**, K.M. Yost, A. Yerro, R.A. Green, 2022, *Robust identification and characterization of thin soil layers in cone penetration data by piecewise layer optimization*, Computers and Geotechnics, 141, article no. 104404.
[Code link](#) , [preprint link](#).
 6. J. Kump, **E.R. Martin**, 2021, *Multichannel Analysis of Surface Waves Accelerated (MASWAccelerated): Software for Efficient Surface Wave Inversion Using MPI and GPUs*, Computers & Geosciences, 156, article no. 104903.
[Code link](#) , [preprint link](#)
 7. K.M. Yost, R.A. Green, S. Upadhyaya, B.W. Maurer, A. Yerro-Colom, **E.R. Martin**, J. Cooper, 2021, *Assessment of the Efficacies of Correction Procedures for Multiple Thin Layer Effects on Cone Penetration Tests*, Soil Dynamics and Earthquake Engineering, 144, 106677.
 8. N.J. Lindsey, **E.R. Martin**, 2021, *Fiber-optic Seismology*, Annual Review of Earth and Planetary Sciences, 49, pp. 309-336.
[Preprint link](#)
 9. T. Zhu, J. Shen, **E.R. Martin**, 2021, *Sensing Earth and Environment Dynamics by Telecommunication Fiber-optic Sensors: An Urban Experiment in Pennsylvania USA*, Solid Earth, 12(1), pp. 219-235.
[Data link](#)
 10. **E.R. Martin**, 2021, *A Linear Algorithm for Ambient Seismic Noise Double Beam-forming Without Explicit Crosscorrelations*, Geophysics, 86(1), pp. IJF-V89.
[Code link](#) , [preprint link](#)
 11. G. Fang, Y.E. Li, Y. Zhao, **E.R. Martin**, 2020, *Urban Near-surface Seismic Monitoring using Distributed Acoustic Sensing*, Geophysical Research Letters, 47(6), e2019GL086115.
 12. Z.J. Spica, M. Perton, **E.R. Martin**, G.C. Beroza, B.L. Biondi, 2020, *Urban Seismic Site Characterization by Fiber-Optic Seismology*, Journal of Geophysical Research: Solid Earth, 125(3), e2019JB018656.
 13. **E.R. Martin**, F. Huot, Y. Ma, R. Cieplicki, S. Cole, M. Karrenbach, B.L. Biondi, 2018, *A Seismic Shift in Scalable Acquisition Demands New Processing: Fiber-Optic Seismic Signal Retrieval in Urban Areas with Unsupervised Learning for Coherent Noise Removal*, IEEE Signal Processing Magazine, 35(2), pp. 31-40.
[Code link](#)

14. N.J. Lindsey, **E.R. Martin**, S. Cole, D. Dreger, S. James, B. Freifeld, B. Biondi, J. Ajo-Franklin, 2017, *Fiber-Optic Network Observations of Earthquake Wavefields*, Geophysical Research Letters, **44**(23), pp. 11792-11799.
[Code link](#)
15. S. Dou, N. Lindsey, A. Wagner, T. Daley, B. Freifeld, M. Robertson, J. Peterson, C. Ulrich, **E.R. Martin**, J. Ajo-Franklin, 2017, *Distributed Acoustic Sensing for Seismic Monitoring of the Near Surface: A Traffic-Noise Interferometry Example*, Scientific Reports, 7, article 11620.
16. Y. Li, H. Yang, **E.R. Martin**, K.L. Ho, L. Ying, 2015, *Butterfly Factorization*, Multi-scale Model. Simul., 13, pp. 714-732.
17. D. Freeman, R. Hotovy, **E.R. Martin**, 2014, *Moving Finite Unit Norm Tight Frames for S^n* , Illinois J. of Math, 58, pp. 311-322.

Professional Periodicals

1. W. Trainor-Guitton, **E.R. Martin**, V. Rodríguez Tribaldos, N. Taverna, V. Dumont, 2022, *Distributed Sensing and Machine Learning Hone Seismic Listening*, Eos, 103, doi.org/10.1029/2022EO220121.
2. A. Titov, A. Girard, **E.R. Martin**, 2021, *Research Committee Update: Working with – and for – early-career researchers*, The Leading Edge, 40(6), pp. 464-464.
3. S. Jakkampudi, J. Shen, W. Li, A. Dev, T. Zhu, **E.R. Martin**, 2020, *Footstep Detection in Urban Seismic Data with a Convolutional Neural Network*, The Leading Edge, 39(9), pp. 654-660.
4. **E.R. Martin**, 2020, *Research Committee Update: Shining a Light on Cities with Seismic Data*, The Leading Edge, 39(6), pp. 437-437.
5. **E.R. Martin**, C. Castillo, S. Cole, S. Sawasdee, S. Yuan, R. Clapp, M. Karrenbach, B. Biondi, 2017, *Seismic Monitoring Leveraging Existing Telecomm Infrastructure at the Stanford Distributed Acoustic Sensing Array: Active, Passive and Ambient Noise Analysis*, The Leading Edge, 36(12), pp. 1025-1031.

Book Chapters

1. **E.R. Martin**, N.J. Lindsey, B. Biondi, J.B. Ajo-Franklin, 2022, “Introduction to Interferometry of Fiber Optic Strain Measurements.” *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 113-130. Preprint available at <https://eartharxiv.org/sx9zt/>.
2. B. Biondi, S. Yuan, **E.R. Martin**, F. Huot, R.G. Clapp, 2022 “Using telecommunication fiber infrastructure for earthquake monitoring and near-surface characterization.” *Distributed Acoustic Sensing in Geophysics: Methods and Applications*, edited by Y. Li, M. Karrenbach, J.B. Ajo-Franklin, American Geophysical Union Geophysical Monograph Series, John Wiley & Sons, pp. 131-148.

Conference Papers

1. K.M. Yost, A. Yerro, R.A. Green, **E.R. Martin**, 2021, *Harnessing Numerical Tools to Study the Limitations of CPTs for Characterizing Complex Soil Stratigraphies for Liquefaction Assessment*, 12th National Conference on Earthquake Engineering, Salt Lake City, Utah, 27 June - 1 July, 2022.
2. K.M. Yost, J. Cooper, R.A. Green, **E.R. Martin**, A. Yerro, 2021, *Correcting measured CPT q_c for multiple thin layer effects*, accepted to 5th International Symposium on Cone Penetration Testing, CPT '22, Bologna, Italy, 8 June - 10 June, 2022.
3. **E.R. Martin**, J. Kump, S. Morgan, T. Zhu, *Analyzing Massive, Passive DAS Data in Wavelet-compressed Form*, 2021, SEG — AGU Advances in Distributed Sensing for Geophysics Workshop, online, 8-9 Feb.

4. F. Huot, **E.R. Martin**, Z. Spica, B. Biondi, *Distributed Acoustic Sensing (DAS) for large-scale urban monitoring and geologic hazard mitigation using preexisting telecommunication infrastructure*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec.
5. T. Zhu, **E.R. Martin**, J. Shen, *New Signals in Massive Data Acquired by Fiber Optic Seismic Monitoring Under Pennsylvania State University*, 2019, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, Singapore, 10-12 Dec., [preprint](#).
6. **E.R. Martin**, *Scalable Seismic Acquisition and Algorithms for Next-Generation Engineering Geophysics*, (invited) 2019, International Conference on Engineering Geophysics, Al Ain, United Arab Emirates, 9-12 Oct.
7. **E.R. Martin**, *A Scalable Algorithm for Cross-correlations of Compressed Ambient Seismic Noise*, 2019, 89th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2019-3216637.1](https://doi.org/10.1190/segam2019-3216637.1)
8. **E.R. Martin**, B. Biondi, *Eighteen months of near-surface monitoring with ambient noise at the Stanford Fiber Optic Seismic Observatory*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2018-2997853.1](https://doi.org/10.1190/segam2018-2997853.1)
9. F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient-noise processing applied to fiber-optic seismic acquisitions (DAS)*, 2018, 88th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2018-2997880.1](https://doi.org/10.1190/segam2018-2997880.1)
10. **E.R. Martin** and B.L. Biondi, *Ambient noise interferometry across two-dimensional DAS arrays*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17677759.1](https://doi.org/10.1190/segam2017-17677759.1)
11. B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, N. Lindsey, *Earthquakes analysis using data recorded by the Stanford DAS array*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17745041.1](https://doi.org/10.1190/segam2017-17745041.1)
12. F. Huot, Y. Ma, R. Cieplik, **E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts (awarded best student poster paper). doi: [10.1190/segam2017-17774369.1](https://doi.org/10.1190/segam2017-17774369.1)
13. J.B. Ajo-Franklin, S. Dou, N. Lindsey, T. Daley, B. Freifeld, **E.R. Martin**, C. Ulrich, T. Wood, I. Eckblaw, A. Wagner, M. Robertson, *Timelapse surface wave monitoring of permafrost thaw using distributed acoustic sensing and a permanent automated seismic source*, 2017, 87th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2017-17774027.1](https://doi.org/10.1190/segam2017-17774027.1)
14. **E.R. Martin**, B. Biondi, M. Karrenbach, S. Cole, *Ambient noise interferometry from DAS array in underground telecommunications conduits*, 2017, EAGE Annual Meeting Proceedings. doi: [10.1190/segam2017-17774027.1](https://doi.org/10.1190/segam2017-17774027.1)
15. **E.R. Martin**, B.L. Biondi, M. Karrenbach, S. Cole, *Continuous Subsurface Monitoring by Passive Seismic with Distributed Acoustic Sensors- The "Stanford Array" Experiment*, 2017, Extended Abstracts of the 1st EAGE Workshop on Practical Reservoir Monitoring. doi: [10.3997/2214-4609.201700017](https://doi.org/10.3997/2214-4609.201700017)
16. **E.R. Martin**, P. Wills, D. Hohl, J.L. Lopez, *Using machine learning to predict production at a Peace River thermal EOR site*, Proceedings of the 2017 SPE Reservoir Simulation Conference. SPE-192696-MS. doi: [10.2118/182696-MS](https://doi.org/10.2118/182696-MS)
17. **E.R. Martin**, N.J. Lindsey, S. Dou, J.B. Ajo-Franklin, A. Wagner, K. Bjella, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, 2016, 86th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2016-13963708.1](https://doi.org/10.1190/segam2016-13963708.1)

18. **E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Interferometry of ambient noise from a trenched distributed acoustic sensing array*, 2015, 85th Ann. Internat. Mtg. SEG Expanded Abstracts. doi: [10.1190/segam2015-5902207.1](https://doi.org/10.1190/segam2015-5902207.1)
19. J. Ajo-Franklin, N. Lindsey, T.M. Daley, B. Freifeld, **E.R. Martin**, M. Robertson, C. Ulrich, A. Wagner, *A field test of distributed acoustic sensing for ambient noise recording*, Expanded Abstracts of the 2015 SEG Ann. Internat. Mtg. doi: [10.1190/segam2015-5926936.1](https://doi.org/10.1190/segam2015-5926936.1)

Technical Reports

1. A.H. Issah, **E.R. Martin**, *Wavelet decomposition for passive data compression and processing*, CWP report, 2022.
2. **E.R. Martin**, *Eighteen months of continuous near-surface monitoring with DAS data collected under Stanford University*, SEP 172, 2018.
3. F. Huot, **E.R. Martin**, B. Biondi, *Automated ambient noise processing applied to fiber optic seismic acquisition*, SEP 172, 2018.
4. **E.R. Martin**, B. Biondi, G. Fabient-Ouellet, R.G. Clapp, *Sensitivity analysis of distributed acoustic sensing arrays*, SEP 170, 2017.
5. **E.R. Martin**, B. Biondi, *Time-lapse changes in ambient noise interferometry and dispersion analysis at the Stanford DAS Array*, SEP 170, 2017.
6. R. Clapp, S. Farris, T. Dahlke, **E.R. Martin**, *C++11 non-linear solver*, SEP 170, 2017.
7. **E.R. Martin**, B. Biondi, S. Cole, M. Karrenbach, *Overview of the Stanford DAS Array-1 (SDASA-1)*, SEP 168, 2017.
8. B. Biondi, **E.R. Martin**, S. Cole, M. Karrenbach, *Earthquakes analysis using data recorded by the Stanford DAS Array*, SEP 168, 2017.
9. **E.R. Martin**, B. Biondi, *Ambient noise interferometry on two-dimensional DAS arrays*, SEP 168, 2017.
10. F. Huot, Y. Ma, R. Cieplik, **E.R. Martin**, B. Biondi, *Automatic noise exploration in urban areas*, SEP 168, 2017.
11. E. Williams, **E.R. Martin**, *Detection and removal of coherent anthropogenic noise from passive seismic data*, SEP 165, 2016.
12. **E.R. Martin**, N. Lindsey, S. Dou, J. Ajo-Franklin, A. Wagner, K. Bjella, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, *Interferometry of a roadside DAS array in Fairbanks, AK*, SEP 163, 2016.
13. **E.R. Martin**, J. Ajo-Franklin, N. Lindsey, T. Daley, B. Freifeld, M. Robertson, C. Ulrich, S. Dou, A. Wagner, *Applying interferometry to ambient seismic noise recorded by a trenched distributed acoustic sensing array*, SEP 158, 2015.
14. **E.R. Martin**, *Compression for effective memory bandwidth use in forward modeling*, SEP 152, 2014.
15. **E.R. Martin**, R. Clapp, H. Le, C. Leader, D. Nichols, *SEPVector: a C++ inversion library*, SEP 152, 2014.
16. M. Denolle, S. de Ridder, J. Chang, **E.R. Martin**, T. Dahlke, H. Arevalo-Lopez, Sr., S. Levin, *Scholte-wave excitation*, SEP 150, 2013.

Invited Talks	Conference on Data Analysis (invited)	Santa Fe, NM, Apr. 2023
	Computational Math Seminar	CU Boulder, Boulder, CO, Jan. 2023
	Geologic Hazards Science Center Seminar	US Geological Survey, remote, Oct. 2022
	Geo Seminar Series	Colorado State University, Ft. Collins, CO, Sep. 2022
	EAS Seminar	University of Houston, Houston, TX, Apr. 2022
	SeismoTea Seminar	University of Utah, Apr. 2022
	AMS Colloquium	Colorado School of Mines, Feb. 2022
	Numerical Analysis and Scientific Computing Seminar, NYU Courant, remote, Nov. 2021	
	DAS Workshop - Infrastructure & Imaging - NHERI@UTexas	Baton Rouge, LA and virtual, Oct. 2021
	Southern California Earthquake Center Annual Meeting (plenary)	remote, Sep. 2021
	GAGE/SAGE Community Science Workshop (plenary)	remote, Aug. 2021
	Caltech Seismological Lab Seminar	Caltech, remote, Apr. 2021
	IRIS Board of Directors Meeting	remote, Feb. 2021
	Heiland Lecture	Colorado School of Mines, remote, Feb. 2021
	AGU Fall Meeting session on Observation of Rotation, Strain and Translation in Seismology - Applications, Instrumentation and Theory (invited),	remote, Dec. 2020
	Scientific Computing and Numerics Seminar	Cornell University, remote, Nov. 2020
	Applied Geophysics Research Seminar	ExxonMobil, remote, Aug. 2020
	Mathematics and Computer Science Division Seminar	Argonne National Lab, remote, Jul. 2020
	Earthquake Science Center Seminar	US Geological Survey, remote, Jul. 2020
	Institute of Geophysics Seminar	University of Hamburg, remote, Jun. 2020
	EGU General Assembly session on Ambient noise seismology: Topics, targets, tools & techniques (invited)	remote, May 2020
	Women in Data Science at Stanford Earth (invited)	Stanford University, Nov. 2019
	International Conference on Engineering Geophysics (invited)	Al Ain, UAE, Oct. 2019
	BiSEPPS Seminar	Harvard University, Cambridge, MA, May 2019
	Solid Earth Brownbag Seminar	Princeton University, Princeton, NJ, May 2019
	IRIS Workshop: Foundations, Frontiers and Future Facilities for Seismology (plenary)	Albuquerque, NM, Jun. 2018
	Heiland Lecture	Colorado School of Mines, Golden, CO, Jan. 2018
	Seismology Seminar	Lawrence Livermore National Lab, Livermore, CA, 2017
Tutorial Presentations	<i>Surface DAS and Environmental Applications</i> , SEG/AAPG IMAGE Special Session, An Introduction to DAS: Using Fiber Optics for Geoscience Applications	Denver, CO and virtual, Sep. 2021
	<i>Distributed Acoustic Sensing</i> , Remote Online Sessions for Emerging Seismologists, video of lecture on YouTube	remote global audience, Jul. 2021
	<i>Why we love arrays for data science</i> , Women in Data Science Worldwide Workshops, video of lecture on YouTube	remote global audience, Mar. 2021
	<i>An Introduction to Seismology with Distributed Acoustic Sensing</i> , AGU Fall Meeting, video of same material recorded for YouTube	Washington, DC, Dec. 2018
Research Advising	Postdoctoral Researchers and Research Associates Supervised	
	Dr. Shihao Yuan, Dept. of Geophysics	CSM, Dec. 2022-present
	Dr. Frantisek Stanek, Dept. of Geophysics	CSM, Feb.-Nov. 2022
	Graduate Student Theses Supervised	
	Tomas Snyder, HSE M.S.	CSM, Jan. 2023 - present
	Ahmad Tourei, HSE Ph.D.	VT, Sep. 2021 - Aug. 2022; CSM, Aug. 2022 - present
	Hafiz Issah, Mathematics Ph.D.	VT, Aug.-Dec. 2021; CSM, Jan. 2022 - present

Sarah Morgan, Mathematics M.S. ([thesis link](#)) VT, Aug. 2020 - May 2022
 Julius Grimm, Applied Geophysics M.S. ([thesis link](#)) IDEA League, graduated Aug. 2021
 co-advised with P. Paitz, P. Edme, A. Fichtner, F. Walter
 Joseph Kump, Mathematics M.S. ([thesis link](#)) VT, graduated May 2021

Undergraduate Student Researchers Supervised

Mia Jungman, Geophysics major CSM, Spring 2023 - present
 Seunghoo Kim, Geophysics major CSM, Fall 2022 - present
 Samantha Paulus, CMDA and Nanoscience major VT, Spring 2021-Spring 2022
 Tony Artis, CMDA major VT, Spring 2020-Spring 2022
 Firaol Woldemariam, CMDA major VT, Spring 2021-Fall 2021
 Anu Trivedi, Mathematics major VT, Fall 2019-Spring 2021
 Srikanth Jakkampudi, Mathematics and CMDA major VT, Fall 2019-Spring 2020
 Sarah Morgan, Mathematics major VT, Fall 2019-Spring 2020
 Tarun Nadipalli, CMDA major VT, Spring 2019
 Ethan Williams (coadvised, B. Biondi) Geophysics & Music major, Stanford, Summer 2016

Graduate Thesis Committee Member

Joseph Cherayil, M.S. with A. Tura, J. Simmons, Geophysics, CSM, degree in progress
 Reynaldo Vite Sanchez, Ph.D. with E. Bozdog, Geophysics, CSM, degree in progress
 Alexander Ankamah, M.S. with J. Hole, Geosciences, VT, degree in progress
 Maggie Bailey, Ph.D. with D. Nychka, S. Bandyopadhyay, AMS, CSM, degree in progress
 Hannah Verboncoeur, Ph.D. with M. Siegfried, Geophysics, CSM, degree in progress
 Peiyao Li, Ph.D. with G. Jin, Geophysics CSM, degree in progress
 Derrick Chambers, Ph.D. with J. Shragge, Geophysics CSM, degree in progress
 Junzhu Shen, Ph.D. with T. Zhu, Geosciences Penn State, degree in progress
 Nhat Nguyen, Ph.D. with L. Massa, AOE VT, degree in progress
 Kaleigh Yost, Ph.D. with R. Green, CEE VT, degree awarded Dec. 2022
 Amin Baghbadorani, Ph.D. with J. Hole, Geosciences VT, degree awarded Aug. 2022
 Joseph Mjehovich, M.S. with G. Jin, Geophysics CSM, degree awarded May 2022
 Zachary Hileman, Ph.D. with G. Pickrell, MSE VT, degree awarded May 2022
 ThaoVy Nguyen, M.S. with R. Hewett, Mathematics VT, degree awarded May 2021
 Taewon Cho, Ph.D. with J. Chung, Mathematics VT, degree awarded May 2021

Teaching

Instructor, Mathematical Geophysics (CSM, GPGN 229) Spring 2023
Instructor, Parallel Scientific Computing (CSM, MATH 440/540) Spring 2023
Instructor, Mathematical Geophysics (CSM, GPGN 229) Spring 2022
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984) Fall 2021
Project Mentor, Capstone Project (VT, CMDA 4864) Fall 2021
 Senior team project on optimal detection of targets in GPR data
Instructor, BEPUR: Broadening Engagement and Participation in Undergraduate Research (VT, MATH 2984) Spring 2021
Instructor, CS Foundations for CMDA (VT, CMDA 3634) 2 sections, Fall 2020
Instructor, CS Foundations for CMDA (VT, CMDA 3634) Spring 2020
Instructor, [Extreme-Scale Inverse Problems](#) (VT, MATH 5984) Fall 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) Fall 2019
Project Mentor, Capstone Project (VT, CMDA 4864) Fall 2019
 Senior team project on removing footprint signals from urban seismic data
Instructor, CS Foundations for CMDA (VT, CMDA 3634) Spring 2019
Instructor, Integrated Quantitative Science I (VT, CMDA 2005) Fall 2018
ICME Teaching Fellow 2016-2018, status to recognize student teaching experience
Course assistant, Intro. to Scientific Computing (Stanford, CME 108) Winter 2016
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) Spring 2015

Undergrad project on statistical analysis of bicycle sharing network data
Instructor, Introduction to Scientific Python (Stanford, CME 193) Winter 2015
Instructor, Short course on Python at SIAM Conference on Geosciences, June 2015
Project Mentor, Projects in App. & Comp. Math (Stanford, CME 181) Winter 2014
 Undergrad project on tsunami modeling using Hawaiian bathymetry
STEM Tutor, Longhorn Center for Academic Excellence Aug. 2011-May 2012
 UT-Austin Division of Diversity and Community Engagement
 Tutored students in introductory math, statistics, physics, and chemistry courses
 Documented tutoring and workshops for grant application materials

**Professional
Service,
Outreach**

Member, SEG JEDI Committee Apr. 2021-present
 Vice-chair, Sep. 2022-present
Committee member, SEG Research Committee Oct. 2018-present
Steering Committee Member, NSF-funded DAS Research Coordination Network
 Co-leader of Machine Learning Working Group Feb. 2020-present
 Co-leader of RCN-affiliated virtual workshops
Member, Mines AMS Computing Resources Working Committee Dec. 2022-present
Co-coordinator, Mines GP Social Media Jan. 2023-present
Committee member, Mines GP Reimagine Committee Jan. 2022-present
Undergraduate advising, Undergraduate Geophysics Majors Mar. 2022-present
Member, Mines AMS Graduate Committee Aug. 2022-present
 Led review of CAM graduate curriculum (Oct.-Dec. 2022)
Member, Mines AMS Graduate Computing Resources Committee Dec 2022-present
Advisor, Undergraduate Geophysics Majors Mar. 2022-present
Co-convener, AGU Fall Meeting session “Near-Surface Geophysics in a Changing Climate” Dec. 2022
Associate editor, *Computers & Geosciences* Nov. 2018-Oct. 2022
Co-organizer, IMAGE Post-convention workshop “High-Performance Computing - What Does the Future Look Like?” Sep. 2022
Member, EarthScope Board Nominating Committee May-July 2022
Co-organizer, [Speakers and Undergraduate Research Engagement](#) Feb. 2019-Dec. 2021
 Program to guide women undergrad math students through first research projects, and bring diverse women mathematicians for research talks and career path discussions
Advisor, Undergraduate Math Majors, Traditional Option Aug. 2020-Dec. 2021
Member, CMDA Computing Curriculum Committee Aug. 2018-Dec. 2021
Co-convener, AGU Fall Meeting session “Observing Wave Field Gradients in Seismology-Applications, Instrumentation and Theory” Dec. 2021
Guest Editor, IEEE CiSE: DOE Computational Science Graduate Fellowship Research Showcase published Nov. 2021
Co-organizer, IMAGE Post-convention workshop “Distributed Fiber-Optic Sensing in Applied Geophysics” Oct. 2021
Co-organizer, GAGE/SAGE Short course “Distributed Acoustic Sensing: Scientific Frontiers and Community Needs” Aug. 2021
Member, Virginia Tech Math Dept. Colloquium Committee Aug. 2020-Jul. 2021
Instructor, Remote Online Sessions for Emerging Seismologists (ROSES) lesson on Distributed Acoustic Sensing July 2021
Panelist, AGU EPSP Connects: Surface processes applications of environmental seismology and distributed acoustic sensing (DAS) Q&A May 2021
Member, SEG Equity in Process Task Force Aug. 2020-Apr. 2021
Faculty sponsor/organizer, 3rd Women in Data Science Blacksburg at Virginia Tech conference April 2021
Panelist, Virginia Tech Assoc. for Women in Computing research panel Mar. 2021
Member, DOE CSGF Screening Committee 2020, 2021
Session Co-Chair, AGU Fall Meeting session on Data Science and Machine Learning for

Natural Hazard Sciences Dec. 2020

Panelist, discussion on women in geosciences for Diversity and Inclusion in Geoscience course at University of Wyoming Oct. 2020

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on DAS: Advances in Fiber Optic Sensing Over the Last Decade Oct. 2020

Speaker, UT-Austin Dean's Scholars Honors Program Friday Lunch Talk Sep. 2020

Co-Lead, DAS Virtual Workshop and Tutorial Aug. 2020

Three-afternoon [virtual workshop and tutorial](#) supported by DAS RCN and IRIS;
8 speaker presentations with extensive discussion, and 150-250 participants/day;
Developed new Jupyter notebooks for hands-on coding with public DAS data;
Managed Slack channel for participants to network/discuss with 10 Workshop Guides.

Member, Virginia Tech Math Dept. Technology Committee Aug. 2018 - Aug. 2020

Judge, Virginia Tech Socially Determined COVID-19 Social Data Project Apr. 2020

Faculty sponsor/organizer, 2nd Women in Data Science Apr. 2020

Blacksburg at Virginia Tech [conference](#) (converted to online event with 3 speakers)

Panelist, Virginia Tech Assoc. for Women in Mathematics internship panel Feb. 2020

Session co-chair, SEG/EAGE Workshop on Geophysical Aspects of Smart Cities, session on Fiber-based Distributed Acoustic Sensing Dec. 2019

Co-Organizer, SEG Annual International Meeting Post-convention Workshop on Real-time Processing for Large-Scale Streaming Seismic Data, [agenda](#) Sep. 2019

Chair, Session on 'Distributed Acoustic Sensing: VSP, Modeling and Imaging Approaches' at SEG Annual International Meeting Sep. 2019

Mentor, DOE CSGF [High Performance Computing Workshop](#) Jul. 2019

Panelist, [Early Career Panel](#), DOE CSGF Annual Program Review Jul. 2019

Mentor, Student mentoring program run by Virginia Tech Sep. 2018 - May 2019

chapter of American Women in Mathematics

Co-Organizer, Session on 'Photonic and Noninertial Seismology' at Seismological Society of America Annual Meeting Apr. 2019

Speaker, Virginia Tech Undergraduate Math Club Apr. 2019

Volunteer, ASA DataFest at Virginia Tech Apr. 2019

Faculty sponsor/organizer, [1st Women in Data Science conference at VT](#) Feb. 2019

Organizer, Session on 'Computational Advances for Large-Scale Geophysical Data' at SIAM CS&E Feb. 2019

Judge, CMDA Fall Data Competition at Virginia Tech Nov. 2018

Panelist, UT-Austin Association for Women in Mathematics career panel Nov. 2018

Speaker, UT-Austin Undergraduate Math Club Nov. 2018

Special section associate editor, *Interpretation* 2018

Special issue on 'Distributed Acoustic Sensing and its Oil Field Potential'

Mentor, ICME first-year mentoring program Sep. 2017-Jun. 2018

Co-organizer, Stanford Computational Geosciences Seminar Jan.-Mar. 2018

Brought in 9 speakers from outside Stanford, organized 1 hr. course EARTH 310

Co-chair, Session on 'Earth Model Building Strategies and Inputs' at SEG Annual International Meeting Sep. 2017

Co-organizer, SEG Data Analytics Post-Convention Workshop Sep. 2017

Invited early-career speakers and moderated panel on data science education

Student panel Stanford Aeronautics & Astronautics faculty search Spring 2017

Mentor, Stanford Women in Math Mentoring Oct. 2016-Jun. 2017

President, Stanford SEG student chapter 2014-2015

Skills

Preferred programming languages: C/C++ and Python

HPC tools: MPI, openMP, CUDA, TBB

Profiling tools: Tau, HPM, NVCC, Vampir

Scientific tools: MATLAB, Mathematica, COMSOL, IDL

Environment and development tools: Docker, Singularity, Doxygen, Git, Jupyter

Notebooks, Google Cloud Compute Engine, Amazon Web Services

**Industry
Experience**

High Performance Computing Internship Summer 2016

Schlumberger, Menlo Park, CA

Mentored by A. Lichnewsky and R.G. Clapp, and supervised by C. Boneti

Benchmarked, co-developed, and tested compression scheme for HPC applications

Areal Monitoring Internship Summer 2015

Shell Projects & Technology, Houston, TX

Mentored by J. Lopez and supervised by P. Wills

Applied machine learning techniques to analyze data and predict production at
steam-driven bitumen field in Peace River

Regularly consulted with reservoir engineer to develop useful products

DOE CSGF Practicum in Weapons & Complex Integration Summer 2014

Lawrence Livermore National Laboratory, Livermore, CA

Supervised by S. Langer

Improved memory performance of pf3D laser-plasma code by combining physics operators

Evaluated hardware compression needs

Computational Physics Internship 2010-2011

Nanohmics, Inc. Austin, TX

Project funded through U.S. Department of Defense, PI B. Zollars

Implemented unstructured adaptive mesh methods for finite element code to model
liquid erosion of coated lenses