

**Sergey Fomel**  
Wallace E. Pratt Professor of Geophysics  
Department of Geological Sciences and Bureau of Economic Geology  
Jackson School of Geosciences  
The University of Texas at Austin

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Austin, TX 78713-8972  
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**Research Interests**

Exploration and computational geophysics: geophysical data analysis, seismic imaging, seismic wave propagation, geophysical inverse problems

**Education**

- Ph.D. in Geophysics, Stanford University 2001
- Diploma in Geophysics (with Honors), Novosibirsk University, Russia 1990

**Research Experience**

- Professor, The University of Texas at Austin 08/2012–Present
- Associate Professor, The University of Texas at Austin 09/2007–07/2012
- Research Scientist, The University of Texas at Austin 01/2004–08/2007
- Research Associate, The University of Texas at Austin 06/2002–12/2003
- Postdoctoral Fellow, Lawrence Berkeley National Laboratory 01/2001–05/2002
- Geophysical Adviser, Schlumberger Geco-Prakla 03/1998–09/1998
- Research Scientist, Institute of Geophysics SB RAS 10/1990–09/1994

**Teaching Experience**

- Machine Learning Applications in Geosciences  
University of Texas at Austin, Department of Geological Sciences 2021–Present
- Seismic Data Processing  
University of Texas at Austin, Department of Geological Sciences 2016–Present
- Multidimensional Data Analysis in Geosciences  
University of Texas at Austin, Department of Geological Sciences 2008–Present
- Seismic Imaging  
University of Texas at Austin, Department of Geological Sciences 2005–Present

- Mathematical Methods in Geophysics  
University of Texas at Austin, Department of Geological Sciences 2010–2014,2019
- Numerical Analysis  
University of California Berkeley, Department of Mathematics 2002
- Seismic Migration Theory  
Novosibirsk University, Department of Geology and Geophysics 1993–1994

### **International Awards and Honors**

#### **Professional achievement awards**

- Honorary Member, Geophysical Society of Houston 2020
- Distinguished Lecturer, Society of Exploration Geophysicists (SEG): *Automating seismic data analysis and interpretation* 2020
- Conrad Schlumberger Award from the European Association of Geoscientists and Engineers (EAGE) "for pioneering work on the subjects of seismic imaging" 2011
- Special Meritorious Award for Engineering Innovation from Hart's E&P: *Imaging ultra deep structures using wave equation migration and illumination* (as consultant to 3DGeo) 2007
- J. Clarence Karcher Award from SEG "for numerous contributions to seismology" 2001

#### **Publication awards**

- Best Paper in *Interpretation* for the paper *Time-variant wavelet extraction with a local-attribute-based time-frequency decomposition for seismic inversion* (Zhang and Fomel) 2017
- Loránd Eötvös Award from EAGE for the paper *Path-Integral Seismic Imaging* (Landa, Fomel, and Moser) 2007
- Honorable Mention, Best Paper in *Geophysics* for the paper *Angle-domain common-image gathers by wavefield continuation methods* (Sava and Fomel) 2003

#### **Presentation awards**

- Honorable Mention, Best Paper at the 88th Annual International Meeting of SEG: *Least-squares seismic horizons with local slopes and multigrid correlations* (Wu and Fomel) presented by X. Wu 2019
- Top 25 presentation at the 88th Annual International Meeting of SEG: *Least-squares seismic horizons with local slopes and multigrid correlations* (Wu and Fomel) presented by X. Wu 2018
- Award of Merit, Best Student Paper for the paper *Diffraction-based migration velocity analysis using double-path summations* (Merzlikin and Fomel) presented by D. Merzlikin at the 87th Annual International Meeting of SEG 2018

- Best Student Poster for the paper *Semiautomatic seismic well ties and log data interpolation* (Bader, Wu, and Fomel) presented by S. Bader at the 87th Annual International Meeting of SEG 2018
- Top 39 presentation at the 87th Annual International Meeting of SEG: *Diffraction-based migration velocity analysis using double-path summations* (Merzlikin and Fomel) presented by D. Merzlikin 2017
- Top 39 presentation at the 87th Annual International Meeting of SEG: *Oriented anisotropy continuation using shifted hyperbola travel-time approximation* (Merzlikin, Fomel, and Sripanich) presented by D. Merzlikin 2017
- Top 39 presentation at the 87th Annual International Meeting of SEG: *Semiautomatic seismic well ties and log data interpolation* (Bader, Wu, and Fomel) presented by S. Bader 2017
- Award of Merit, Best Student Poster for the paper *Modified anelliptic approximations for qP velocities in transversely isotropic media* (Sripanich and Fomel) presented by Y. Sripanich at the 84th Annual International Meeting of SEG 2015
- Honorable Mention, Best Poster presented at the 84th Annual International Meeting of SEG: *Transforming prestack seismic data by Gardner continuation* 2015
- Top 30 presentation at the 84th Annual International Meeting of SEG: *Anelliptic approximations for qP velocities in orthorhombic media* (Sripanich and Fomel) presented by Y. Sripanich 2014
- Top 30 presentation at the 84th Annual International Meeting of SEG: *Modified anelliptic approximations for qP velocities in transversely isotropic media* (Sripanich and Fomel) presented by Y. Sripanich 2014
- Top 30 presentation at the 84th Annual International Meeting of SEG: *Random noise attenuation using local similarity* (Chen and Fomel) presented by Y. Chen 2014
- Top 30 presentation at the 84th Annual International Meeting of SEG: *Transforming prestack seismic data by Gardner continuation* 2014
- Best Student Poster for the paper *Comparison of seismic diffraction imaging techniques: plane wave destruction versus apex destruction* (Decker, Klokov, and Fomel) presented by L. Decker at the 83rd Annual International Meeting of SEG 2014
- Top 30 presentation at the 83rd Annual International Meeting of SEG: *Wave-equation time migration* 2013
- Top 30 presentation at the 82nd Annual International Meeting of SEG: *Seismic data decomposition into spectral components using regularized nonstationary autoregression* 2012
- Award of Merit, Best Student Poster for the paper *Lowrank finite-differences for wave extrapolation* (Song, Fomel, Ying, and Ding) presented by X. Song at the 81st Annual International Meeting of SEG 2012
- Best Poster presented at the 80th Annual International Meeting of SEG: *Seismic wave extrapolation using lowrank symbol approximation* (Fomel, Ying, and Song) 2011

- Two Top 30 presentations at the 80th Annual International Meeting of SEG:  
*Local similarity with the envelope as a seismic phase detector*  
*Seismic wave extrapolation using lowrank symbol approximation* 2010
- Top 30 presentation at the 78th Annual International Meeting of SEG:  
*Predictive painting of 3-D seismic volumes* 2008
- Honorable Mention, Best Poster presented at the 77th Annual International Meeting of SEG:  
*Applications of nonstationary regression* 2008
- Two Top 30 presentations at the 77th Annual International Meeting of SEG:  
*Applications of nonstationary regression*  
*Time-lapse image registration using the local similarity attribute* 2007
- Best Poster presented at the 76th Annual International Meeting of SEG: *Local seismic attributes* 2007
- Three Top 30 presentations at the 76th Annual International Meeting of SEG:  
*Towards the seislet transform*  
*Post-stack velocity analysis by separation and imaging of seismic diffractions*  
*Local seismic attributes* 2006
- Top 25 presentation at the 75th Annual International Meeting of SEG:  
*A multistep approach to multicomponent seismic image registration with application to a West Texas carbonate reservoir study* 2005
- Top 25 presentation at the 74th Annual International Meeting of SEG:  
*Theory of 3-D angle gathers in wave-equation imaging* 2004
- Award of Merit for the paper *Wavefield extrapolation in Riemannian coordinates* (Sava and Fomel) presented by P. Sava at the 74th Annual International Meeting of SEG 2004
- Award of Merit for the paper *Amplitude-preserved common image gathers by wave-equation migration* (Sava, Biondi, and Fomel) presented by P. Sava at the 72nd Annual International Meeting of SEG 2001

#### **Local Awards**

- Wallace E. Pratt Professorship in Geophysics 2015–Present
- 2nd place, Best Represented Research Group award, 6th Annual GSEC Research Symposium, Jackson School of Geosciences, UT Austin 2017
- 2nd place, Best Represented Research Group award, 5th Annual GSEC Research Symposium, Jackson School of Geosciences, UT Austin 2016
- Best Represented Research Group award, 4th Annual GSEC Research Symposium, Jackson School of Geosciences, UT Austin 2015
- Shell Companies Foundation Distinguished Chair Fellowship, UT Austin 2014–2015
- Shell Companies Foundation Centennial Chair Fellowship, UT Austin 2012–2014

- Tinker Family BEG Publication Award “for exemplary publication record in exploration geophysics and dedication to the development of the open-source software Madagascar, as demonstrated in the 2013 publication *Seismic wave extrapolation using lowrank symbol approximation* (Fomel, Ying, and Song)” 2014
- Outstanding Educator Award, Jackson School of Geosciences, UT Austin 2012
- John E. “Brick” Elliott Centennial Professorship, UT Austin 2009–2012
- Centennial Distinguished Lecturer, Bureau of Economic Geology, UT Austin 2009
- Research Excellence Fellowship, Jackson School of Geosciences, UT Austin 2007–2009
- Research Fellowship, Jackson School of Geosciences, UT Austin 2006–2007
- Young Scientist Fellowship, Jackson School of Geosciences, UT Austin 2005–2006

### **Research Supervision**

#### **Postdoctoral fellows**

- Xinming Wu (Ph.D. Colorado School of Mines) 2016–2019  
Currently Professor at the University of Science and Technology of China
- Tiejuan Zhu (Ph.D. Stanford University) 2014–2016  
Currently Assistant Professor at the Pennsylvania State University
- Yen-Ming Mark Lai (Ph.D. University of Maryland, College Park) 2014–2015  
Currently Data Scientist at IntegraFEC
- Hejun Zhu (Ph.D. Princeton University) 2013–2015  
(co-advised with O. Ghattas)  
Currently Associate Professor at the University of Texas at Dallas
- Mehdi Far (Ph.D. University of Houston) 2013–2014  
(co-advised with B. Hardage)  
Currently Lead Data Scientist at Amazon Web Services
- Jingwei Hu (Ph.D. University of Wisconsin-Madison) 2011–2014  
(co-advised with L. Ying)  
Currently Associate Professor at The University of Washington
- Alexander Klokov (Ph.D. Gubkin University of Oil and Gas, Russia) 2011–2013  
Currently Lead Scientific Developer at Factor Technology
- Hesam Kazemeini (Ph.D. Uppsala University, Sweden) 2010–2011  
Currently Seismic Specialist at Alpha Plus Reservoir Solutions
- Roman Kazinnik (Ph.D. Tel-Aviv University, Israel) 2009–2010  
Currently Lead Data Scientist at Brighthouse Financial
- Yang Liu (Ph.D. Jilin University, China) 2007–2010  
Currently Professor at Jilin University
- T. Jules Browaeys (Ph.D. Institut de Physique du Globe, France) 2006–2009  
Currently Senior Geophysicist at Total E&P

## Ph.D. students

- Luke Decker  
Parameter selection in seismic data analysis problems 2021  
Currently Geophysicist at Chevron
- Yunzhi Shi  
Deep learning empowers the next generation of seismic interpretation 2020  
Currently Data Scientist at Amazon Web Services
- Dmitry Merzlikin  
Diffraction imaging by path-summation migration 2018  
Currently Geophysicist at Schlumberger
- Zhiguang Xue  
Regularization strategies for increasing efficiency and robustness of least-squares RTM and FWI 2017  
Currently Geophysicist at CGG
- Yanadet Sripanich  
Seismic anisotropy analysis using Muir-Dellinger parameters 2017  
Currently Geophysicist at PTTEP
- Junzhe Sun  
Seismic modeling and imaging in complex media with low-rank approximation 2016  
Currently ML Research Scientist at Meta
- Yangkang Chen  
Noise attenuation in seismic data from the simultaneous-source acquisition 2015  
Currently Research Scientist at UT Austin
- Parvaneh Karimi  
Seismic interpretation using predictive painting 2015  
Currently Staff Geophysicist at Oxy
- Vladimir Bashkardin  
Phase-space imaging of reflection seismic data 2014  
Currently HPC Computational Scientist at BP
- Siwei Li  
Imaging and velocity model building with linearized eikonal equation and upwind finite-differences 2014  
Currently Earth Scientist at Chevron
- Xiaolei Song  
Application of Fourier finite differences and lowrank approximation method for seismic modeling and subsalt imaging 2012  
Currently Geophysicist at BP
- William Burnett  
Multiazimuth velocity analysis using velocity-independent seismic imaging 2011  
Currently Geophysicist at ExxonMobil
- Hesam Kazemeini  
Uppsala University, Sweden  
Seismic Investigations at the Ketzin CO<sub>2</sub> injection site, Germany: Applications to sub-surface feature mapping and CO<sub>2</sub> seismic response modeling 2009

(co-advisor, principal advisor: C. Juhlin)  
Currently Geophysicist at ION

- Harpreet Kaur passed candidacy, Ph.D. expected 2021
- Zhicheng Geng passed candidacy, Ph.D. expected 2022
- Nam Pham passed candidacy, Ph.D. expected 2023
- Ben Gremillion
- Rebecca Gao

### M.S. students

- Ben Gremillion 2017–2019  
Seismic data interpolation with shaping inversion to zero offset and least-squares flattening  
Currently Ph.D. student at Ut Austin
- Nam Pham 2017–2019  
Automatic channel detection using deep learning  
Currently Ph.D. student at Ut Austin
- Sean Bader 2016–2018  
Seismic and well log data integration using data-matching techniques  
Currently Geophysicist at EOG Resources
- Mason Phillips 2015–2017  
Geophysical data registration using modified plane-wave destruction filters  
Currently Geophysicist at DownUnder GeoSolutions
- Kelly Regimbal 2014–2016  
Improving resolution of NMO stack using shaping regularization  
Currently Applied Scientist at Improbable
- Ryan Swindeman 2013–2015  
Iterative seismic data interpolation using plane-wave shaping  
Currently Scientific Software Developer at Enthought
- Luke Decker 2012–2014  
Seismic diffraction imaging methods and applications  
Currently Ph.D. student at UT Austin
- Shaunak Ghosh 2011–2013  
Multiple suppression in the t-x-p domain  
Currently Staff Seismic Imager at CGG
- Salah Alhadab 2010–2012  
Diffraction imaging of sediment drifts in Canterbury Basin  
Currently Geophysicist at Saudi Aramco
- Yihua Cai 2010–2012  
Spectral recomposition and multicomponent seismic image registration  
Currently Geophysicist at Shell
- Boris Berkhin Novosibirsk University, Russia  
True-amplitude seismic migration 1992–1993  
Currently CEO at DataEast LLC

- Hector Corzo Pola

### **B.S. Honors students**

- Tharit Tangkijwanichaku 2019-2021  
Chain of operators for inverse Hessian estimation in least-squares migration  
Currently Geophysicist at PTTEP
- Sarah Greer 2016-2018  
A data matching algorithm and its applications in seismic data analysis  
Currently Ph.D. student at MIT
- Lubna Barghouty 2012-2013  
Surface-related multiple elimination and velocity-independent imaging of a 2D seismic line from the Viking Graben dataset  
Currently Ph.D. student at MIT
- Yanadet Sripanich 2011-2013  
An efficient algorithm for two-point seismic ray tracing  
Currently Geophysicist at PTTEP
- Reem Alomar

### **Visiting Ph.D. students**

- Kristian Jensen 2019  
University of Bergen, Norway
- Yuhan Sui 2017-2019  
Harbin Institute of Technology, China
- Hanming Chen 2016-2017  
China University of Petroleum, Beijing, China
- Xufei Gong 2016-2017  
China University of Petroleum, Qingdao, China
- Xinming Wu 2015-2016  
Colorado School of Mines
- Pengliang Yang 2013-2014  
Xi'an Jiaotong University, China
- Gang Fang 2012-2013  
China University of Petroleum, Dongying, China
- Zhonghuan Chen 2011-2012  
Tsinghua University, China
- Shujuan Guo 2010-2011  
China University of Petroleum, Dongying, China
- Min Zhang 2009-2010  
China University of Petroleum, Dongying, China
- Hesam Kazemeini 2008-2009  
Uppsala University, Sweden



- Guochang Liu 2008–2009  
China University of Petroleum, Beijing, China

### Ph.D. thesis committees

- Oleg Ovcharenko KAUST, Saudi Arabia, Ph.D. in Earth Science & Engineering  
Data-driven methods for the initialization of full-waveform inversion 2021
- Son Phan Ph.D. in Geological Sciences  
Machine learning algorithms solving seismic inversion challenges 2021
- Aaron Myers Ph.D. in Computational Science, Engineering, and Mathematics  
Particle methods for PDE-constrained Bayesian inverse problems 2020  
Currently at Suited
- David Tang Ph.D. in Geological Sciences  
Methods for analysis In digital images of sedimentary rocks 2020  
Currently at ExxonMobil
- Janaki Vamaraju Ph.D. in Geological Sciences  
Cost effective strategies for problems in computational geophysics: Seismic modeling and imaging 2019  
Currently at Shell
- Nicholas Alger Ph.D. in Computational Science, Engineering, and Mathematics  
Data-scalable Hessian preconditioning for distributed parameter PDE-constrained inverse problems 2019
- Badr Alulaiw Ph.D. in Geological Sciences  
Fast methods to model the response of fluid-filled fractures and estimate the fracture properties 2018  
Currently at Saudi Aramco
- Yunan Yang Ph.D. in Mathematics  
Optimal transport for seismic inverse problems 2018  
Currently at Cornell University
- Debanjan Datta Ph.D. in Geological Sciences  
Implementing efficient global optimization methods in full waveform inversion 2017
- Benjamin Crestel Ph.D. in Computational Science, Engineering, and Mathematics  
Advanced techniques for multi-source, multi-parameter, and multi-physics inverse problems 2017  
Currently at Dimensional Fund Advisors
- Seungbum Koo Ph.D. in Civil, Architectural and Environmental Engineering  
Time reversal concept for wave energy focusing 2017
- Rodolfo Victor Ph.D. in Petroleum and Geosystems Engineering  
Multiscale, image-based interpretation of well logs acquired in a complex, deepwater carbonate reservoir 2017  
Currently at Petrobras
- Yawen He Ph.D. in Geological Sciences  
Seismic chronostratigraphy at the reservoir scale: Modeling and applications 2017  
Currently at LinkedIn

- Han Liu Ph.D. in Geological Sciences  
Effect of fracture properties on seismic wave propagation in elastic media 2017  
Currently at BP
- Pranav Karve Ph.D. in Civil, Architectural and Environmental Engineering  
Inverse source problem for focusing wave energy to targeted subsurface formations:  
theory and numerical experiments 2016  
Currently at Vanderbilt University
- Qi Ren Ph.D. in Geological Sciences  
Anisotropic seismic characterization of the Eagle Ford shale: rock-physics modeling,  
stochastic seismic inversion, and geostatistics 2016  
Currently at Google
- James Martin Ph.D. in Computational Science, Engineering, and Mathematics  
A computational framework for the solution of infinite-dimensional Bayesian statistical  
inverse problems with application to global seismic inversion 2015
- Tatyana Torskaya Ph.D. in Petroleum and Geosystems Engineering  
Pore-scale analysis of grain shape and sorting effect on fluid transport phenomena in  
porous media 2013  
Currently at ExxonMobil
- Yang Xue Ph.D. in Geological Sciences  
Novel stochastic inversion methods and workflows for reservoir characterization and  
monitoring 2013  
Currently at Shell
- Nadia Kremer University of Alberta, Canada, Ph.D. in Geophysics  
Multidimensional seismic data reconstruction using tensor analysis 2013  
Currently at Shell
- Jack Poulson Ph.D. in Computational Science, Engineering, and Mathematics  
Fast parallel solution of heterogeneous 3D time-harmonic wave equations 2012  
Currently at Google
- Engin Alkan Ph.D. in Geological Sciences  
Exploring hydrocarbon-bearing shale formations with multi-component seismic tech-  
nology and evaluating direct shear modes produced by vertical-force sources 2012  
Currently at Shell
- John Hooker Ph.D. in Geological Sciences  
Fracture scaling and diagenesis 2012  
Currently at Pennsylvania State University
- Paul Tsuji Ph.D. in Computational Science, Engineering, and Mathematics  
Fast algorithms for frequency-domain wave propagation 2012  
Currently at Lawrence Livermore National Laboratory
- Robert Mallan Ph.D. in Petroleum and Geosystems Engineering  
Interpretation of multi-component induction and sonic measurements acquired in high-  
angle wells and joint 1D radial inversion of resistivity and sonic logs 2010  
Currently at Chevron
- Chaoshun Hu Ph.D. in Geological Sciences  
Stochastic tomography and Gaussian beam depth migration 2008  
Currently at Chevron

- Chandan Kumar Ph.D. in Geological Sciences  
Parameter inversion for seismic anisotropy 2006  
Currently at BP
- Cem Kilic Ph.D. in Geological Sciences  
Characterization and quantification of middle Miocene reservoirs of Starfak and Tiger Shoal Fields, Offshore Louisiana, using genetic sequence stratigraphy and neural networks 2004  
Currently at Shell

### **M.S. thesis committees**

- Andrew Yanke M.S. in Geological Sciences  
Feasibility of Isotropic Inversion in Orthorhombic Media: The Barrett Unconventional Model 2016  
Currently at Statoil
- Saygin Ileri M.S. in Geological Sciences  
AVA Analysis and Modeling of Multi-Component Seismic Wave Modes (P-P, P-SV and SV-P); Wolfberry Play Midland Basin, Texas 2015  
Currently at Turkish Petroleum
- Jung Kyu Kim M.S. in Geological Sciences  
Multicomponent seismic image matching and comparison - Fasken Ranch, Andrews County, Texas 2015  
Currently at KOGAS
- Lucas Fidler M.S. in Geological Sciences  
Fracture characterization in the New Albany Shale 2011  
Currently at Memorial Resource Development.

### **Publications**

#### **Book Chapters**

1. X. Janson and S. Fomel, 2011, 3-D forward seismic model of an outcrop-based geocellular model, *in* Outcrops revitalized: Tools, techniques and applications; SEPM Concepts in Sedimentary Geology, No. 10 (Edited by O. J. Martinsen, M. Sullivan, A. Pulham, and P. Haughton), Allen Press, 87-106.

#### **Peer-reviewed Journal Publications**

1. Y. Chen, A. Savvaïdis , S. Fomel, Y. Chen, O. Saad, H. Wang , Y. Oboue , L. Yang , W. Chen, 2022, Denoising of distributed acoustic sensing seismic data: Journal of Geophysical Research - Solid Earth, submitted.
2. Y. Chen, A. Savvaïdis , S. Fomel, Y. Chen, O. Saad, H. Wang , Y. Oboue , L. Yang , W. Chen, 2022, Deciphering the invisible seismic signatures from fiber-optic cables: Nature Communications, submitted.

3. O. Saad, Y. Chen, A. Savvaidis, S. Fomel, and Y. Chen, 2022, Real-Time earthquake detection and magnitude estimation using vision transformer: *Journal of Geophysical Research - Solid Earth*, submitted.
4. Y. Chen, O. Saad, A. Savvaidis, Y. Chen, and S. Fomel, 2022, 3D microseismic monitoring using machine learning: *Journal of Geophysical Research - Solid Earth*, submitted.
5. L. Decker and S. Fomel, 2022, A variational approach for picking optimal surfaces from semblance-like panels: *Geophysics*, submitted.
6. L. Yang, S. Wang, X. Chen, W. Chen, O. Saad, X. Zhou, N. Pham, Z. Geng, S. Fomel, and Y. Chen, 2022, High-fidelity permeability and porosity prediction using deep learning with the self-attention mechanism: *IEEE Transactions on Neural Networks and Learning Systems*, submitted.
7. H. Kaur, R. Chunduru, D. Datta, and S. Fomel, 2022, Robust method for low frequency extrapolation for full waveform inversion using deep learning: *Geophysics*, submitted.
8. Z. Geng, Z. Hu, X. Wu, and S. Fomel, 2022, Semi-supervised salt segmentation using Mean Teacher: *Interpretation*, accepted.
9. H. Wang, Y. Chen, O. Saad, W. Chen, Y. Oboue, L. Yang, S. Fomel, and Y. Chen, 2022, A Matlab code package for 2D/3D local slope estimation and structural filtering: *Geophysics*, accepted.
10. H. Wang, Y. Yunfeng, Y. Oboue, R. Abma, Z. Geng, S. Fomel, and Y. Chen, 2022, Simultaneous reconstruction and denoising of extremely sparse 5D seismic data by a simple and effective method: *IEEE Transactions on Geoscience and Remote Sensing*, accepted.
11. O. Saad, Y. Chen, D. Trugman, M. S. Soliman, L. Samy, A. Savvaidis, M. A. Khamis, A. G. Hafez, S. Fomel, and Y. Chen, 2022, Machine learning for the fast and reliable source-location prediction in earthquake early warning: *IEEE Geoscience and Remote Sensing Letters*, accepted.
12. H. Kaur, A. Sun, Z. Zhong, and S. Fomel, 2022, Time-lapse seismic data inversion for estimating reservoir parameters using deep learning: *Interpretation*, accepted.
13. Z. Geng, Z. Zhao, Y. Shi, X. Wu, S. Fomel, and M. Sen, 2022, Deep learning for velocity model building with common-image gathers: *Geophysical Journal International*, accepted.
14. L. Decker and S. Fomel, 2021, A probabilistic approach to seismic diffraction imaging: *Lithosphere*, v. 2021, 6650633.
15. H. Kaur, S. Fomel, and N. Pham, 2021, A fast algorithm for elastic wave-mode separation using deep learning with generative adversarial networks (GANs): *Journal of Geophysical Research - Solid Earth*, v. 126, e2020JB021123.
16. N. Pham and S. Fomel, 2021, Uncertainty and Interpretability analysis of encoder-decoder architecture for channel detection: *Geophysics*, v. 86, O49-O58.
17. Y. Chen and S. Fomel, 2021, Nonstationary local signal-and-noise orthogonalization: *Geophysics*, v. 86, V409-V418.
18. Y. Chen, S. Fomel, H. Wang, and S. Zu, 2021, 5D dealiased seismic data interpolation using nonstationary prediction-error filter: *Geophysics*, v. 86, V419-V429.
19. Y. Chen, O. Saad, M. Bai, X. Liu, and S. Fomel, 2021, A compact program for 3D passive seismic source-location imaging: *Seismological Research Letters*, v. 92, 3187-3201.

20. G. Huang, X. Chen, J. Li, O. Saad, Y. Chen, S. Fomel, C. Luo, and H. Wang, 2021, The slope-attribute-regularized high-resolution prestack seismic inversion: *Surveys in Geophysics*, v. 42, 625–671.
21. Y. Chen, O. Saad, G. Huang, Y. Chen, A. Savvaidis, S. Fomel, and N. Pham, 2021, SCALODEEP: A highly generalized deep learning framework for real-time earthquake detection: *Journal of Geophysical Research - Solid Earth*, v. 126, e2020JB021473.
22. S. Fomel and H. Kaur, 2021, Wave-equation time migration: *Geophysics*, v. 86, 1JF-V89.
23. Y. Shi, X. Wu, and S. Fomel, 2021, Interactively tracking seismic geobodies with a deep learning flood-filling network: *Geophysics*, v. 86, A1-A5.
24. H. Kaur, N. Pham, and S. Fomel, 2021, Seismic data interpolation using deep learning with generative adversarial networks: *Geophysical Prospecting*, v. 69, 307-326.
25. D. Merzlikin, S. Fomel, and X. Wu, 2020, Least-squares diffraction imaging using shaping regularization by anisotropic smoothing: *Geophysics*, v. 85, S313-S325.
  - Selected for *Geophysics* Bright Spots, *The Leading Edge* 2020.
26. H. Kaur, N. Pham, and S. Fomel, 2020, Improving resolution of migrated images by approximating the inverse Hessian using deep learning: *Geophysics*, v. 85, WA173-WA183.
27. Z. Geng, X. Wu, Y. Shi, and S. Fomel, 2020, Deep learning for relative geologic time and seismic horizons: *Geophysics*, v. 85, WA87-WA100.
28. H. Kaur, S. Fomel, and N. Pham, 2020, Seismic ground-roll noise attenuation using deep learning: *Geophysical Prospecting*, v. 68, 2064-2077.
29. Y. Shi, X. Wu, and S. Fomel, 2020, Waveform Embedding: automatic horizon picking with unsupervised deep learning: *Geophysics*, v. 85, WA67–WA76.
30. X. Wu, Z. Geng, Y. Shi, N. Pham, S. Fomel, and G. Caumon, 2020, Building realistic structure models to train deep convolutional neural networks for seismic structural interpretation: *Geophysics*, v. 85, WA27-WA39.
31. Z. Geng, X. Wu, S. Fomel, and Y. Chen, 2020, Relative time seislet transform: *Geophysics*, v. 85, V223-V232.
32. Y. Sripanich, S. Fomel, J. Trampert, W. Burnett, and T. Hess, 2020, Probabilistic move-out analysis by time warping: *Geophysics*, v. 85, U1-U20.
33. X. Wu, L. Liang, Y. Shi, Z. Geng, and S. Fomel, 2019, Multitask learning for local seismic image processing: fault detection, structure-oriented smoothing with edge-preserving, and seismic normal estimation by using a single convolutional neural network: *Geophysical Journal International*, v. 219, 2097-2109.
34. X. Wu, Y. Shi, S. Fomel, L. Liang, Q. Zhang, and A. Yusifov, 2019, FaultNet3D: Predicting fault probabilities, strikes, and dips with a single convolutional neural network: *IEEE Transactions on Geoscience and Remote Sensing*, v. 57, 9138-9155.
35. Y. Sripanich, S. Fomel, A. Stovas, 2019, Effects of lateral heterogeneity on time-domain processing parameters: *Geophysical Journal International*, v. 219, 1181-1201.
36. Z. Xue, H. Zhang, Y. Zhao, and S. Fomel, 2019, Pattern-guided dip estimation with plane-wave destruction filters: *Geophysical Prospecting*, v. 67, 1798-1810.

37. Y. Shi, X. Wu, and S. Fomel, 2019, SaltSeg: Automatic 3D salt segmentation using a deep convolutional neural network: *Interpretation*, v. 7, SE113-SE122.
38. N. Pham, S. Fomel, and D. Dunlap, 2019, Automatic channel detection using deep learning: *Interpretation*, v. 7, SE43-SE50.
39. S. Bader, X. Wu, and S. Fomel, 2019, Missing log data interpolation and semiautomatic seismic well ties using data matching techniques: *Interpretation*, v. 7, T347-T361.
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### **Refereed Conference Publications**

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2. N. Pham, D. Dunlap, and S. Fomel, 2021, Channel facies and faults multisegmentation in seismic volumes: *First International Meeting for Applied Geoscience & Energy*, 1430-1434.
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8. H. Kaur, N. Pham, and S. Fomel, 2020, Separating primaries and multiples using hyperbolic Radon transform with deep learning: 90th Annual International Meeting, SEG, 1496-1500.
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10. H. Kaur, A. Sun, Z. Zhong, and S. Fomel, 2020, Time-lapse seismic data inversion for estimating reservoir parameters using deep learning: 90th Annual International Meeting, SEG, 1720-1724.
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15. S. Greer, S. Fomel, and M. Fry, 2019, Prestack phase corrections using local seismic attributes: 89th Annual International Meeting, SEG, 3949-3953.
16. H. Kaur, N. Pham, and S. Fomel, 2019, Seismic data interpolation using CycleGAN: 89th Annual International Meeting, SEG, 2202-2206.
17. X. Wu, L. Liang, Y. Shi, Z. Geng, and S. Fomel, 2019, Deep learning for local seismic image processing: fault detection, structure-oriented smoothing with edge-preserving, and slope estimation by using a single convolutional neural network: 89th Annual International Meeting, SEG, 2222-2226.
18. H. Kaur, N. Pham, and S. Fomel, 2019, Estimating the inverse Hessian for amplitude correction of migrated images using deep learning: 89th Annual International Meeting, SEG, 2278-2282.
19. Z. Geng, X. Wu, Y. Shi, and S. Fomel, 2019, Relative geologic time estimation using a deep convolutional neural network: 89th Annual International Meeting, SEG, 2238-2242.
20. X. Wu, Z. Geng, Y. Shi, N. Pham, and S. Fomel, 2019, Building realistic structure models to train convolutional neural networks for seismic structural interpretation: 89th Annual International Meeting, SEG, 4745-4750.
21. H. Kaur, S. Fomel, and N. Pham, 2019, Overcoming numerical dispersion of finite-difference wave extrapolation using deep learning: 89th Annual International Meeting, SEG, 2318-2322.
22. L. Decker and S. Fomel, 2019, Path-integral seismic diffraction imaging with probability weights: 89th Annual International Meeting, SEG, 4231-4235.
23. B. Gremillion and S. Fomel, 2019, Seismic image interpolation from irregular locations to a 3D grid using dynamic time warping: 89th Annual International Meeting, SEG, 4590-4594.

24. H. Kaur, N. Pham, and S. Fomel, 2019, A fast hyperbolic Radon transform algorithm using deep neural network: EAGE Annual Meeting.
25. H. Kaur and S. Fomel, 2019, Seismic imaging in stratigraphic coordinates: EAGE Annual Meeting.
26. H. Kaur, S. Fomel, and N. Pham, 2019, Ground roll attenuation using generative adversarial network: EAGE Annual Meeting.
27. A. Stovas and S. Fomel, 2019, Generalized velocity approximation in anisotropic media: EAGE Annual Meeting.
28. Z. Xue, H. Baek, H. Zhang, Y. Zhao, T. Zhu, and S. Fomel, 2018, Solving fractional Laplacian viscoelastic wave equations using domain decomposition: 88th Annual International Meeting, SEG, 3943-3947.
29. D. Merzlikin, S. Fomel, and X. Wu, 2018, Least-squares diffraction imaging using shaping regularization by anisotropic smoothing: 88th Annual International Meeting, SEG, 4326-4331.
30. B. Gremillion and S. Fomel, 2018, Improving spatial resolution of seismic stack using inversion to zero-offset with shaping regularization: 88th Annual International Meeting, SEG, 4568-4572.
31. X. Wu, Y. Shi, S. Fomel, and L. Liang, 2018, Convolutional neural networks for fault interpretation in seismic images: 88th Annual International Meeting, SEG, 1946-1950.
32. X. Wu and S. Fomel, 2018, Automatic fault interpretation using optimal surface voting: 88th Annual International Meeting, SEG, 1639-1643.
33. X. Wu and S. Fomel, 2018, Least-squares seismic horizons with local slopes and multi-grid correlations: 88th Annual International Meeting, SEG, 1688-1692.
34. S. Greer, Z. Xue, and S. Fomel, 2018, Improving migration resolution by approximating the least-squares Hessian using non-stationary amplitude and frequency matching: 88th Annual International Meeting, SEG, 4261-4265.
35. S. Bader, S. Fomel, and Z. Xue, 2018, Using well-seismic mistie to update the velocity model: 88th Annual International Meeting, SEG, 5218-5222.
36. S. Bader, K. Spikes, and S. Fomel, 2018, Missing well log data prediction using Bayesian approach in the relative geologic time domain: 88th Annual International Meeting, SEG, 804-808.
37. Y. Shi, X. Wu, and S. Fomel, 2018, Automatic salt-body classification using deep convolutional neural network: 88th Annual International Meeting, SEG, 1971-1975.
38. N. Pham, S. Fomel, and D. Dunlap, 2018, Automatic channel detection using deep learning: 88th Annual International Meeting, SEG, 2026-2030.
39. L. Decker and S. Fomel, 2018, A finite-element method for blind deconvolution with dynamic frequency wavelets: 88th Annual International Meeting, SEG, 4563-4567.
40. S. Bader, X. Wu, and S. Fomel, 2018, Missing well log estimation by multiple well-log correlation: EAGE Annual Meeting, We A 10.
41. D. Merzlikin, S. Fomel, X. Wu, and M. Phillips, 2017, Unconventional reservoir characterization using azimuthal seismic diffraction imaging: Unconventional Resources Technology Conference ( URTeC), 2695232.

42. Y. Sripanich and S. Fomel, 2017, Fast time-to-depth conversion and interval velocity estimation with weak lateral variations: 87th Annual International Meeting, SEG, 5701-5705.
43. L. Decker, D. Merzlikin, and S. Fomel, 2017, Enhancing seismic diffraction images using semblance-weighted least-squares migration: 87th Annual International Meeting, SEG, 5294-5299.
44. D. Merzlikin, S. Fomel, and Y. Sripanich, 2017, Oriented anisotropy continuation using shifted hyperbola travel-time approximation: 87th Annual International Meeting, SEG, 4721-4726.
  - Listed in Top 39 SEG presentations of 2017.
45. Y. Sripanich, S. Fomel, and A. Stovas, 2017, Effects of lateral heterogeneity on reflection traveltimes: 87th Annual International Meeting, SEG, 5577-5582.
46. S. Greer and S. Fomel, 2017, Matching and merging high-resolution and legacy seismic images: 87th Annual International Meeting, SEG, 5933-5937.
47. X. Wu, Y. Shi, S. Fomel, and F. Li, 2017, Incremental correlation of multiple well logs following geologically optimal neighbors: 87th Annual International Meeting, SEG, 1945-1949.
48. Y. Shi, X. Wu, and S. Fomel, 2017, Finding an optimal well-log correlation sequence using coherence-weighted graphs: 87th Annual International Meeting, SEG, 1982-1987.
49. Y. Shi, X. Wu, and S. Fomel, 2017, Well log interpolation guided by geologic distance: 87th Annual International Meeting, SEG, 1939-1944.
50. S. Greer and S. Fomel, 2017, Balancing local frequency content in seismic data using non-stationary smoothing: 87th Annual International Meeting, SEG, 4278-4282.
51. D. Merzlikin and S. Fomel, 2017, Diffraction-based migration velocity analysis using double-path summations: 87th Annual International Meeting, SEG, 980-985.
  - Listed in Top 39 SEG presentations of 2017.
  - Award of Merit, Best Student Paper.
52. X. Wu, S. Fomel, and M. Hudec, 2017, Fast salt boundary interpretation with optimal path picking: 87th Annual International Meeting, SEG, 2060-2065.
53. S. Bader, X. Wu, and S. Fomel, 2017, Semiautomatic seismic well ties and log data interpolation: 87th Annual International Meeting, SEG, 2381-2385.
  - Listed in Top 39 SEG presentations of 2017.
  - Best Student Poster Presentation.
54. M. Phillips and S. Fomel, 2017, Estimation of timeshifts between time-lapse seismic images using spectral decomposition: 87th Annual International Meeting, SEG, 5839-5844.
55. Z. Xue, X. Wu, and S. Fomel, 2017, Predictive painting across faults: 87th Annual International Meeting, SEG, 1907-1912.
56. Z. Xue, S. Fomel, and T. Zhu, 2017, Visco-acoustic full waveform inversion with Q-compensation: EAGE Annual Meeting, Th-P4-10.
57. Y. Sripanich, S. Fomel, and P. J. Fowler, 2016, A comparison of anisotropic parameterizations for TI and orthorhombic media and their sensitivity with respect to qP velocities: 86th Annual International Meeting, SEG, 479-484.



58. Z. Xue, J. Sun, S. Fomel, and T. Zhu, 2016, Q-compensated full waveform inversion using constant-Q wave equation: 86th Annual International Meeting, SEG, 1063-1068.
59. Z. Xue, N. Alger, and S. Fomel, 2016, Full waveform inversion using smoothing kernels: 86th Annual International Meeting, SEG, 1358-1363.
60. J. Sun, Z. Xue, S. Fomel, T. Zhu, and N. Nakata, 2016, Full waveform inversion of passive seismic data for sources and velocities: 86th Annual International Meeting, SEG, 1405-1410.
61. H. Zhu and S. Fomel, 2016, Applications of adaptive matching filter in full waveform inversion: 86th Annual International Meeting, SEG, 1438-1443.
62. G. Wu, S. Fomel, and Y. Chen, 2016, Data-driven time-frequency analysis of seismic data using regularized nonstationary autoregression: 86th Annual International Meeting, SEG, 1700-1705.
63. M. Phillips, S. Fomel, and R. Swindeman, 2016, Structure-oriented plane-wave Sobel filter for edge detection in seismic images: 86th Annual International Meeting, SEG, 1954-1959.
64. Y. Shi, D. Merzlikin and S. Fomel, 2016, Microseismic source localization using time-domain path-integral migration: 86th Annual International Meeting, SEG, 2601-2606.
65. N. Nakata, G. C. Beroza, J. Sun, and S. Fomel, 2016, Migration-based passive source imaging for continuous data: 86th Annual International Meeting, SEG, 2607-2611.
66. R. Zhang and S. Fomel, 2016, Application of predictive painting to well-log data interpolation and seismic inversion: 86th Annual International Meeting, SEG, 3582-3586.
67. R. Zhang and S. Fomel, 2016, Time variant wavelet extraction using spectral decomposition for seismic impedance inversion: 86th Annual International Meeting, SEG, 3751-3756.
68. S. Fomel, 2016, Fast scattered data gridding: 86th Annual International Meeting, SEG, 4059-4063.
69. K. Regimbal and S. Fomel, 2016, High-resolution recursive stacking using plane-wave construction: 86th Annual International Meeting, SEG, 4069-4074.
70. J. Sun, S. Fomel, Y. Sripanich, and P. Fowler, 2016, Recursive integral time extrapolation of elastic waves using lowrank approximation: 86th Annual International Meeting, SEG, 4145-4151.
71. D. Merzlikin, S. Fomel, and A. Bona, 2016, Diffraction imaging using azimuthal plane-wave destruction: 86th Annual International Meeting, SEG, 4288-4293.
72. D. Merzlikin and S. Fomel, 2016, Least-squares path-integral diffraction imaging using sparsity constraints: 86th Annual International Meeting, SEG, 4299-4304.
73. S. Fomel and J. Claerbout, 2016, Streaming prediction-error filters: 86th Annual International Meeting, SEG, 4787-4791.
74. M. Phillips and S. Fomel, 2016, Seismic timelapse image registration using amplitude-adjusted planewave destruction: 86th Annual International Meeting, SEG, 5473-5478.
75. P. Karimi, S. Fomel, and R. Zhang, 2016, Time-lapse image registration using the stratigraphic coordinate system: 86th Annual International Meeting, SEG, 5500-5505.
76. Y. Sripanich, S. Fomel, P. Fowler, A. Stovas, and K. Spikes, 2016, Muir-Dellinger parameters for analysis of anisotropic signatures: 17th International Workshop on Seismic Anisotropy, 1-4.

77. J. Sun, S. Fomel, Y. Sripanich, and P. Fowler, 2016, Elastic wave extrapolation in strongly heterogeneous anisotropic media: 17th International Workshop on Seismic Anisotropy, 5-6.
78. Y. Sripanich and S. Fomel, 2016, Theory of interval travelttime parameter estimation in layered anisotropic media: 17th International Workshop on Seismic Anisotropy, 27-28.
79. A. Stovas and S. Fomel, 2016, Generalized Moveout Approximation Revisited. Alternative Parameter Selection: EAGE Annual Meeting, Th-LHR2-13.
80. Y. Sripanich, S. Fomel, J. Sun, and J. Cheng, 2015, Elastic wave-vector decomposition in orthorhombic media: 85th Annual International Meeting, SEG, 498-503.
81. H. Zhu, S. Li, S. Fomel, G. Stadler, and O. Ghattas, 2015, Uncertainty estimation for full-waveform inversion with a prior information from depth migration: 85th Annual International Meeting, SEG, 1409-1414.
82. J. Sun, T. Zhu, S. Fomel, and W. Song, 2015, Investigating the possibility of locating microseismic sources using distributed sensor networks: 85th Annual International Meeting, SEG, 2485-2490.
83. P. Karimi and S. Fomel, 2015, Image guided well log interpolation using predictive painting: 85th Annual International Meeting, SEG, 2786-2790.
84. G. Fang, J. Hu, and S. Fomel, 2015, Weighted least square based lowrank finite difference for seismic wave extrapolation: 85th Annual International Meeting, SEG, 3554-3559.
85. R. Swindeman and S. Fomel, 2015, Seismic data interpolation using plane-wave shaping regularization: 85th Annual International Meeting, SEG, 3853-3858.
86. K. Regimbal and S. Fomel, 2015, Improving resolution of NMO stack using shaping regularization: 85th Annual International Meeting, SEG, 3859-3863.
87. J. Sun, T. Zhu, and S. Fomel, 2015, Preconditioning least-squares RTM in viscoacoustic media by Q-compensated RTM: 85th Annual International Meeting, SEG, 3959-3965.
88. D. Merzlikin and S. Fomel, 2015, An efficient workflow for path-integral imaging of seismic diffractions: 85th Annual International Meeting, SEG, 4096-4100.
89. Z. Xue, S. Fomel, and J. Sun, 2015, RTM interpolation using time-shift gathers: 85th Annual International Meeting, SEG, 4216-4221.
90. Y. Chen and S. Fomel, 2015, EMD-seislet transform: 85th Annual International Meeting, SEG, 4775-4778.
91. Y. Lai, E. Price, R. Ward, and S. Fomel, 2015, Median balancing: a linearly convergent algorithm for time gain power correction: 85th Annual International Meeting, SEG, 5127-5131.
92. Y. Sripanich and S. Fomel, 2015, 3D generalized nonhyperboloidal moveout approximation: 85th Annual International Meeting, SEG, 5147-5152.
93. Y. Chen and S. Fomel, 2015, Random noise attenuation using local signal and noise orthogonalization: EAGE Annual Meeting, Th-N116-06.
94. Y. Chen, J. Ma, and S. Fomel, 2015, Double sparsity dictionary for seismic noise attenuation: EAGE Annual Meeting, Th-P6-03.
95. Y. Sripanich and S. Fomel, 2014, Modified anelliptic approximations for qP velocities in transversely isotropic media: 84th Annual International Meeting, SEG, 409-414.

- Listed in Top 30 SEG presentations of 2014.
  - Award of Merit, Best Student Poster Presentation.
96. Y. Sripanich and S. Fomel, 2014, Anelliptic approximations for qP velocities in orthorhombic media: 84th Annual International Meeting, SEG, 453-457.
    - Listed in Top 30 SEG presentations of 2014.
  97. Y. Sripanich and S. Fomel, 2014, Two-point seismic ray tracing in layered media using bending: 84th Annual International Meeting, SEG, 3371-3376.
  98. S. Li, S. Fomel, and H. Zhu, 2014, Frequency-domain reverse-time migration with a sparse-frequency sampling: 84th Annual International Meeting, SEG, 3898-3904.
  99. J. Sun, S. Fomel, and J. Hu, 2014, Least-squares reverse-time migration using one-step two-way wave extrapolation by non-stationary phase shift: 84th Annual International Meeting, SEG, 3967-3973.
  100. Z. Xue, Y. Chen, S. Fomel, and J. Sun, 2014, Imaging incomplete data and simultaneous-source data using least-squares reverse-time migration with shaping regularization: 84th Annual International Meeting, SEG, 3991-3996.
  101. J. Sun, T. Zhu, and S. Fomel, 2014, Viscoacoustic modeling and imaging using low-rank approximation: 84th Annual International Meeting, SEG, 3997-4002.
  102. Y. Liu and S. Fomel, 2014, Separation of primaries and multiples using VD-seislet frame: 84th Annual International Meeting, SEG, 4140-4146.
  103. Y. Chen and S. Fomel, 2014, Random noise attenuation using local similarity: 84th Annual International Meeting, SEG, 4360-4365.
    - Listed in Top 30 SEG presentations of 2014.
  104. S. Fomel, 2014, Recent advances in time-domain seismic imaging: 84th Annual International Meeting, SEG, 4400-4404.
  105. S. Fomel, 2014, Transforming prestack seismic data by Gardner continuation: 84th Annual International Meeting, SEG, 4643-4649.
    - Honorable Mention, Best Poster Award.
    - Listed in Top 30 SEG presentations of 2014.
  106. L. Decker and S. Fomel, 2014, Diffraction imaging and velocity analysis using oriented velocity continuation: 84th Annual International Meeting, SEG, 4810-4815.
  107. R. H. Herrera, M. van der Baan, and S. Fomel, 2014, Comparison of two semi-automatic techniques for seismic-to-well tying: EAGE Annual Meeting, Tu-E103-13.
  108. R. Zhang, X. Song, S. Fomel, M. K. Sen, and S. Srinivasan, 2013, Time-lapse seismic registration and inversion for CO<sub>2</sub> sequestration study at Cranfield, Part II: Pre-stack Analysis: 83rd Annual International Meeting, SEG, 5015-5020.
  109. J. Hu, S. Fomel, and L. Ying, 2013, A fast algorithm for 3D azimuthally anisotropic velocity scan: 83rd Annual International Meeting, SEG, 4795-4799.
  110. S. Li and S. Fomel, 2013, A robust approach to time-to-depth conversion in the presence of lateral velocity variations: 83rd Annual International Meeting, SEG, 4800-4805.
  111. X. Yang, J. Lu, and S. Fomel, 2013, Seismic modeling using the frozen Gaussian approximation: 83rd Annual International Meeting, SEG, 4677-4682.

112. L. Decker, A. Klovov, and S. Fomel, 2013, Comparison of seismic diffraction imaging techniques: plane wave destruction versus apex destruction: 83rd Annual International Meeting, SEG, 4054-4059.
  - Best Student Poster Presentation.
113. J. Sun and S. Fomel, 2013, Lowrank one-step wave extrapolation: 83rd Annual International Meeting, SEG, 3905-3910.
114. T. Alkhalifah, Z. Wu, and S. Fomel, 2013, Exploring imaging capabilities of the extended prestack wavefield: 83rd Annual International Meeting, SEG, 3877-3881.
115. S. Fomel, 2013, Wave-equation time migration: 83rd Annual International Meeting, SEG, 3703-3708.
  - Listed in Top 30 SEG presentations of 2013.
116. A. Klovov and S. Fomel, 2013, Seismic diffraction imaging, one migration dip at a time: 83rd Annual International Meeting, SEG, 3697-3702.
117. G. Fang, S. Fomel, and Q. Du, 2013, Seismic wave extrapolation on a staggered grid using lowrank decomposition and lowrank finite-differences: 83rd Annual International Meeting, SEG, 3433-3438.
118. P. Karimi and S. Fomel, 2013, Predictive coherency: 83rd Annual International Meeting, SEG, 1492-1497.
119. P. Karimi and S. Fomel, 2013, Computing volumetric-curvature attributes using predictive painting: 83rd Annual International Meeting, SEG, 1477-1482.
120. J. Cheng and S. Fomel, 2013, Fast algorithms for elastic-wave-mode separation and vector decomposition using low-rank approximation for anisotropic media: 83rd Annual International Meeting, SEG, 991-997.
121. Y. Chen, S. Fomel, and J. Hu, 2013, Iterative deblending of simultaneous-source seismic data using shaping regularization: 83rd Annual International Meeting, SEG, 119-125.
122. A.M. Popovici, N. Tanushev, I. Sturzu, I. Musat, C. Tsingas, and S. Fomel, 2013, Fast beam migration using plane wave destructor (PWD) beam forming: 75th EAGE Conference and Exhibition incorporating SPE EUROPEC 2013, <http://dx.doi.org/10.3997/2214-4609.20130725>
123. S. Li and S. Fomel, 2013, A robust approach for time-to-depth conversion and interval velocity estimation: 75th EAGE Conference and Exhibition incorporating SPE EUROPEC 2013, <http://dx.doi.org/10.3997/2214-4609.20130371>
124. Y. Tao, M. Davidson, H. Swan, S. Fomel, J. Malloy, J. Howell, S. Chiu, and R. Olson, 2012, Constrained simultaneous automatic picking for VVAZ analysis: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-0271.1>.
125. J. Hu, S. Fomel, L. Demanet, and L. Ying, 2012, A fast butterfly algorithm for the hyperbolic Radon transform: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-0462.1>.
126. A. Klovov and S. Fomel, 2012, Optimal migration aperture for conflicting dips: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-0504.1>.

127. Y. Cai, S. Fomel, and H. Zeng, 2012, Spectral recomposition using separable non-linear least squares: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-0528.1>.
128. S. Li, S. Fomel, and A. Vladimirsky, 2012, Prestack first-break traveltome tomography using the double-square-root eikonal equation: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-0773.1>.
129. S. Ghosh and S. Fomel, 2012, Multiple suppression in the  $t$ - $x$ - $p$  domain: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-1398.1>.
130. S. Fomel, 2012, Seismic data decomposition into spectral components using regularized nonstationary autoregression: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-1416.1>.
  - Listed in Top 30 SEG presentations of 2012.
131. V. Bashkardin, T. J. Browaeys, S. Fomel, F. Gao, R. Kazinnik, S. A. Morton, S. Terentyev, A. Vladimirsky, and P. Williamson, 2012, Phase-space computation of multi-arrival traveltimes, Part I: Theory and concepts: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-1522.1>.
132. V. Bashkardin, T. J. Browaeys, S. Fomel, F. Gao, S. A. Morton, S. Terentyev, and A. Vladimirsky, 2012, Phase-space computation of multi-arrival traveltimes: Part II – Implementation and application to angle-domain imaging: 82nd Annual International Meeting, SEG, <http://dx.doi.org/10.1190/segam2012-1537.1>.
133. X. Song and S. Fomel, 2012, Lowrank finite-differences and lowrank Fourier finite-differences for seismic wave extrapolation: EAGE 73rd Conference and Exhibition, P215.
134. A. Klovov and S. Fomel, 2012, Diffraction imaging in the dip-angle domain: Viking Graben case study: EAGE 73rd Conference and Exhibition, Y025.
135. M. van der Baan, S. Fomel, and M. Perz, 2011, Phase analysis: A complementary tool to spectral decomposition?: 31st Annual GCSSEPM Foundation Bob F. Perkins Research Conference *Attributes: New Views on Seismic Imaging Their Use in Exploration and Production*, 251-258.
136. P. Karimi and S. Fomel, 2011, Stratigraphic coordinate system: 81st Annual International Meeting, SEG, 960-964.
137. C. Saragiotis, T. Alkhalifah, and S. Fomel, 2011, Automatic traveltome picking using local time-frequency maps: 81st Annual International Meeting, SEG, 1648-1652.
138. N. Tanushev, R. Tsai, S. Fomel, and B. Engquist, 2011, Gaussian beam decomposition for seismic migration: 81st Annual International Meeting, SEG, 3356-3361.
139. X. Song, S. Fomel, L. Ying, and T. Ding, 2011, Lowrank finite-differences for wave extrapolation: 81st Annual International Meeting, SEG, 3372-3376.
  - Award of Merit, Best Student Poster Presentation.
140. S. Li, S. Fomel, and A. Vladimirsky, 2011, Improving wave-equation fidelity of Gaussian beams by solving the complex eikonal equation: 81st Annual International Meeting, SEG, 3829-3834.
141. T. Alkhalifah and S. Fomel, 2011, A stable implementation of the prestack exploding reflector modeling and migration: 81st Annual International Meeting, SEG, 3851-3855.

142. W. Burnett, S. Fomel, and R. Bansal, 2011, Diffraction velocity analysis by path-integral seismic imaging: 81st Annual International Meeting, SEG, 3898-3902.
143. W. Burnett and S. Fomel, 2011: Diffraction imaging using 3D azimuthally-anisotropic velocity continuation, EAGE 73rd Conference and Exhibition, B026.
144. L. Casasanta and S. Fomel, 2010, VTI interval velocities by predictive painting in the  $\tau$ - $p$  domain: 80th Annual International Meeting, SEG, 232-237.
145. A. Stovas and S. Fomel, 2010, Generalized moveout approximation in the  $\tau$ - $p$  domain: 80th Annual International Meeting, SEG, 253-257.
146. A. Al-Dajani and S. Fomel, 2010, Fractures detection using multi-azimuth diffractions focusing measure: Is it feasible?: 80th Annual International Meeting, SEG, 287-291.
147. W. Burnett and S. Fomel, 2010, Azimuthally anisotropic 3D velocity continuation: 80th Annual International Meeting, SEG, 307-312.
148. S. Fomel and M. van der Baan, 2010, Local similarity with the envelope as a seismic phase detector: 80th Annual International Meeting, SEG, 1555-1559.
  - Listed in Top 30 SEG presentations of 2010.
149. T. Alkhalifah and S. Fomel, 2010, Source-receiver two-way wave extrapolation for prestack exploding-reflector modeling and migration: 80th Annual International Meeting, SEG, 2950-2955.
150. S. Fomel, L. Ying, and X. Song, 2010, Seismic wave extrapolation using lowrank symbol approximation: 80th Annual International Meeting, SEG, 3092-3096.
  - Best Poster Award.
  - Listed in Top 30 SEG presentations of 2010.
151. X. Song and S. Fomel, 2010, Fourier finite-difference wave propagation: 80th Annual International Meeting, SEG, 3204-3209.
152. Y. Liu and S. Fomel, 2010, Trace interpolation beyond aliasing using regularized non-stationary autoregression: 80th Annual International Meeting, SEG, 3662-3667.
153. Y. Liu and S. Fomel, 2010, Seismic data analysis using local time-frequency transform: 80th Annual International Meeting, SEG, 3711-3716.
154. M. van der Baan, M. Perz, and S. Fomel, 2010, Nonstationary phase estimation for analysis of wavelet character: EAGE 72nd Conference and Exhibition, D020.
155. L. Casasanta and S. Fomel, 2010, Velocity-independent  $\tau$ - $p$  moveout in a layered VTI medium: EAGE 72nd Conference and Exhibition, C030.
156. M van der Baan, M Perz, S Fomel, 2010, Nonstationary phase estimation: A tool for seismic interpretation?: GeoCanada Conference, 884.
157. G. Liu, S. Fomel, and X. Chen, 2009, Time-frequency characterization using local attributes: 79th Annual International Meeting, SEG, 1826-1829.
158. S. Fomel and N. Tanushev, 2009, Time-domain seismic imaging using beams: 79th Annual International Meeting, SEG, 2747-2752.
159. T. Alkhalifah and S. Fomel, 2009, Angle gathers in wave-equation imaging for VTI media: 79th Annual International Meeting, SEG, 2899-2903.
160. G. Liu, S. Fomel, and X. Chen, 2009, Stacking angle-domain common-image gathers for normalization of illumination: 79th Annual International Meeting, SEG, 2949-2954.

161. Y. Liu, S. Fomel, and G. Liu, 2009, Structure-enhancing nonlinear filtering of seismic images: 79th Annual International Meeting, SEG, 3223-3227.
162. Y. Liu and S. Fomel, 2009, OC-seislet: seislet transform construction with differential offset continuation: 79th Annual International Meeting, SEG, 3228-3232.
163. S. Fomel and R. Kazinnik, 2009, Non-hyperbolic common reflection surface: 79th Annual International Meeting, SEG, 3620-3624.
164. W. Burnett and S. Fomel, 2009, Moveout analysis by time-warping: 79th Annual International Meeting, SEG, 3710-3714.
165. S. Fomel and A. Stovas, 2009, Generalized nonhyperbolic moveout approximation: 11th International Congress of the Brazilian Geophysical Society.
166. Y. Liu and S. Fomel, 2009, Structure-enhancing LUM filtering for seismic images: EAGE 71st Conference and Exhibition, V026.
167. H. Kazemeini, S. Fomel, and C. Juhlin, 2008, Prestack spectral blueing: A tool for increasing seismic resolution: 78th Annual International Meeting, SEG, 854-858.
168. S. Fomel, 2008: Predictive painting of 3-D seismic volumes: 78th Annual International Meeting, SEG, 864-868.
  - Listed in Top 30 SEG presentations of 2008.
169. S. Fomel, 2008, Nonlinear shaping regularization in geophysical inverse problems: 78th Annual International Meeting, SEG, 2046-2051.
170. E. Landa, S. Fomel, and M. Reshef, 2008, Separation, imaging, and velocity analysis of seismic diffractions using migrated dip-angle gathers: 78th Annual International Meeting, SEG, 2176-2180.
171. S. Fomel and Y. Liu, 2008, Seismic data analysis with one-dimensional seislet frame: 78th Annual International Meeting, SEG, 2581-2585.
172. W. Burnett and S. Fomel, 2008, 3-D velocity-independent elliptically anisotropic moveout correction: 78th Annual International Meeting, SEG, 2952-2956.
173. W. Burnett and S. Fomel, 2008, A Gaussian beam analysis of the Radon transform: 78th Annual International Meeting, SEG, 2993-2997.
174. M. Cameron, S. Fomel, and J. Sethian, 2007, Inverse problem in seismic imaging: Proc. Appl. Math. Mech., 7, 1024803-1024804.
175. S. Fomel and L. Jin, 2007, Time-lapse image registration using the local similarity attribute: 77th Annual International Meeting, SEG, 2979-2983.
  - Listed in Top 30 SEG presentations of 2007.
176. T. J. Browaeys and S. Fomel, 2007, Directional analysis of the wave-equation imaging condition: 77th Annual International Meeting, SEG, 2250-2254.
177. S. Fomel, 2007, Applications of nonstationary regression: 77th Annual International Meeting, SEG, 1962-1966.
  - Honorable Mention, Best Poster Award.
  - Listed in Top 30 SEG presentations of 2007.
178. A. M. Popovici, S. Crawley, Y. Li, C. Lupascu, and S. Fomel, 2007, Imaging ultra deep geologic structures using wave equation migration and illumination: 10th International Congress of the Brazilian Geophysical Society.

179. M. T. Taner, S. Treitel, M. Al-Chalabi, and S. Fomel, 2007, An offset dependent NMO velocity model: EAGE 69th Conference and Exhibition, P036.
180. T. J. Browaeys and S. Fomel, 2007, Seismic attenuation in a von Karman correlated medium: EAGE 69th Conference and Exhibition, P261.
181. S. Fomel and A. Stovas, 2007, Generalized non-hyperbolic moveout approximation: EAGE 69th Conference and Exhibition, B041.
182. S. Fomel and G. Hennenfent, 2007, Reproducible computational experiments using SCons: 32nd International Conference on Acoustics, Speech, and Signal Processing (ICASSP), IV/1257-1260.
183. M. Cameron, S. Fomel, and J. Sethian, 2006, Seismic velocity estimation and time to depth conversion of time-migrated images: 76th Annual International Meeting, SEG, 3066-3069.
184. S. Fomel, 2006, Towards the seislet transform: 76th Annual International Meeting, SEG, 2847-2850.
  - Listed in Top 30 SEG presentations of 2006.
185. S. Fomel, E. Landa, and M. T. Taner, 2006, Post-stack velocity analysis by separation and imaging of seismic diffractions: 76th Annual International Meeting, SEG, 2559-2562.
  - Listed in Top 30 SEG presentations of 2006.
186. A. A. Duchkov, M. V. de Hoop, and S. Fomel, 2006, Continuation of a class of seismic processors and associated rays: 76th Annual International Meeting, SEG, 2549-2552.
187. P.C. Sava and S. Fomel, 2006, Time-shift imaging condition for converted waves: 76th Annual International Meeting, SEG, 2460-2463.
188. M. T. Taner, S. Fomel, and E. Landa, 2006, Prestack separation of seismic diffractions using plane-wave decomposition: 76th Annual International Meeting, SEG, 2401-2404.
189. S. Fomel, 2006, Local seismic attributes: 76th Annual International Meeting, SEG, 1228-1231.
  - Best Poster Award.
  - Listed in Top 30 SEG presentations of 2006.
190. P. Sava and S. Fomel, 2006, Generalized imaging conditions for wave-equation migration: EAGE 68th Conference and Exhibition, paper G-014.
191. R. J. Ferguson and S. Fomel, 2006, Interpolation and extrapolation of seismic data using Newton's Method: AIP Conference Proceedings, v. 834, 296-304.
192. S. Fomel, M. Backus, K. Fouad, B. Hardage, and G. Winters, 2005, A multistep approach to multicomponent seismic image registration with application to a West Texas carbonate reservoir study: 75th Annual International Meeting, SEG, 1018-1021.
  - Listed in Top 25 SEG presentations of 2005.
193. R. J. Ferguson and S. B. Fomel, 2005, Data regularization and redatuming using Newton's method: 75th Annual International Meeting, SEG, 1669-1672.
194. A. Guitton, J. Lomask, and S. Fomel, 2005, Non-linear estimation of vertical delays: 75th Annual International Meeting, SEG, 841-844.
195. B. Artman and S. Fomel, 2005, Fourier-domain imaging condition for shot-profile migration: 75th Annual International Meeting, SEG, 2013-2016.



196. S. Fomel, 2005, Shaping regularization in geophysical estimation problems: 75th Annual International Meeting, SEG, 1673-1676.
197. S. Fomel, 2005, Velocity-independent time-domain seismic imaging using local event slopes: 75th Annual International Meeting, SEG, 2269-2272.
198. S. Fomel and A. Guitton, 2005, Model preconditioning by plane-wave construction in geophysical estimation problems: 75th Annual International Meeting, SEG, 2601-2604.
199. P. C. Sava and S. Fomel, 2005, Coordinate-independent angle-gathers for wave equation migration: 75th Annual International Meeting, SEG, 2052-2055.
200. P. C. Sava and S. Fomel, 2005, Time-shift imaging condition: 75th Annual International Meeting, SEG, 1850-1853.
201. P. C. Sava and S. Fomel, 2005, Wave-equation common-angle gathers for converted waves: 75th Annual International Meeting, SEG, 947-950.
202. P. C. Sava and S. Fomel, 2004, Seismic modeling with Riemannian wavefield extrapolation: EAGE 66th Conference and Technical Exhibition.
203. L. Zhang, J. W. Rector, G. M. Hoversten, and S. Fomel, 2004, Split-step complex Padé-Fourier depth migration: 74th Annual International Meeting, SEG, 989-992.
204. P. Sava and S. Fomel, 2004, Wavefield extrapolation in Riemannian coordinates: 74th Annual International Meeting, SEG, 1049-1052.
  - Award of Merit, Best Student Presentation.
205. S. Fomel, 2004, Theory of 3-D angle gathers in wave-equation imaging: 74th Annual International Meeting, SEG, 1053-1056.
  - Listed in Top 25 SEG presentations of 2004.
206. R. J. Ferguson, S. B. Fomel, and M. K. Sen, M. K., 2003, Wave propagation in heterogeneous media by a least squares one way operator: EAGE 65th Conference and Technical Exhibition.
207. S. Fomel and M. M. Backus, 2003, Multicomponent seismic data registration by least squares: 73rd Annual International Meeting, SEG, 781-784.
208. S. Fomel, 2003, Angle-domain seismic imaging and the oriented wave equation: 73rd Annual International Meeting, SEG, 893-896.
209. S. Fomel, 2003, Differential azimuth moveout: 73rd Annual International Meeting, SEG, 2068-2071.
210. S. Fomel, M. M. Backus, M. DeAngelo, P. Murray, and B. A. Hardage, 2003, Multicomponent seismic data registration for subsurface characterization in the shallow Gulf of Mexico: in Offshore Technology Conference, Paper No. 15117.
211. P. Murray, M. DeAngelo, M. M. Backus, B. A. Hardage, R. J. Graebner, and S. Fomel, 2003, Interpreting multicomponent seismic data in the Gulf of Mexico for shallow sedimentary properties: Offshore Technology Conference, OTC Paper No. 15118.
212. P. C. Sava and S. Fomel, 2002, Wave-equation migration velocity analysis beyond the Born approximation: 72nd Annual International Meeting, SEG, 2285-2288.
213. P. C. Sava, S. Fomel, and B. L. Biondi, 2001, Amplitude-preserved common image gathers by wave-equation migration: 72nd Annual International Meeting, SEG, 296-299.

- Award of Merit, Best Student Presentation.
214. S. Fomel, 2001, Migration velocity analysis by velocity continuation: 71st Annual International Meeting, SEG, 1107-1110.
  215. S. Fomel, 2001, Seismic data interpolation and noise attenuation with plane-wave destructor filters: 71st Annual International Meeting, SEG, 1985-1988.
  216. S. Fomel, 2001, Seismic reflection data interpolation with differential offset and shot continuation: 71st Annual International Meeting, SEG, 2045-2048.
  217. P. C. Sava and S. Fomel, 1998, Huygens wavefront tracing: a robust alternative to ray tracing: 68th Annual International Meeting, SEG, 1961-1964.
  218. J. Rickett, J. Claerbout, and S. Fomel, 1998, Implicit 3-D depth migration by wavefield extrapolation with helical boundary conditions: 68th Annual International Meeting, SEG, 1762-1765.
  219. T. Alkhalifah, S. Fomel, and B. Biondi, 1998, Time-domain processing in arbitrarily inhomogeneous media: 68th Annual International Meeting, SEG, 1756-1759.
  220. B. L. Biondi, R. G. Clapp, S. Fomel, and T. Alkhalifah, 1998, Robust reflection tomography in the time domain: 68th Annual International Meeting, SEG, 1847-1850.
  221. R. G. Clapp, B. L. Biondi, S. Fomel, and J. F. Claerbout, 1998, Regularizing velocity estimation using geologic dip information: 68th Annual International Meeting, SEG, 1851-1854.
  222. Y. Sun and S. Fomel, 1998, Fast-marching eikonal solver in the tetragonal coordinates: 68th Annual International Meeting, SEG, 1949-1952.
  223. S. Fomel, 1997, Velocity continuation and the anatomy of prestack residual migration: 67th Annual International Meeting, SEG, 1762-1765.
  224. B. L. Biondi, S. Fomel, and N. Chemingui, 1996, Application of azimuth moveout to 3-D prestack imaging: 66th Annual International Meeting, SEG, 431-434.
  225. S. Fomel, N. Bleistein, H. Jaramillo, and J. K. Cohen, 1996, True amplitude DMO, offset continuation and AVA/AVO for curved reflectors: 66th Annual International Meeting, SEG, 1731-1734.
  226. S. Fomel and B. L. Biondi, 1995, The time and space formulation of azimuth moveout: 65th Annual International Meeting, SEG, 1449-1452.
    - Reprinted in *Prestack Depth Migration and Velocity Model Building* (Edited by I. F. Jones, R. I. Bloor, B. L. Biondi, and J. T. Etgen), 2009, Society of Exploration Geophysicists.

#### **Other Publications (last three years)**

1. S. Fomel, 2019, President's Page: Toward scientific equality: *The Leading Edge*, v. 38, 504.

#### **Invited Presentations (last three years)**

- Microsoft

Oct 2021

- SPE Virtual Workshop: Open Subsurface May 2021
- Petrobras Apr 2021
- Saudi Aramco Apr 2021
- Chevron Apr 2021
- ExxonMobil Mar 2021
- University of Houston Nov 2020
- SEG DL tour: Universidad Nacional Autónoma de México Mar 2020
- SEG DL tour: Mexico Instituto Politecnico Nacional Mar 2020
- SEG DL tour: Asociacion Mexicana de Geofisicos de Exploracion (AMGE) Mar 2020
- SEG DL tour: Universidad Juarez Autonoma de Tabasco Mar 2020
- SEG DL tour: Shell Feb 2020
- SEG DL tour: University of Houston Feb 2020
- SEG DL tour: Geophysical Society of Houston Feb 2020
- SEG DL tour: San Antonio Geophysical Society Feb 2020
- SEG DL tour: Coastal Bend Geophysical Society Feb 2020
- SEG DL tour: Texas A&M Kingsville Feb 2020
- SEG DL tour: CICESE, Mexico Feb 2020
- SEG DL tour: Pacific Coast Section of SEG Feb 2020
- SEG DL tour: California State University, Fresno Feb 2020
- SEG DL tour: Stanford University Feb 2020
- SEG DL tour: University of Calgary Jan 2020
- SEG DL tour: CSEG Jan 2020
- SEG DL tour: University of Alberta Jan 2020
- SEG DL tour: Texas A&M University Jan 2020

### **Professional Activities**

- Member of American Geophysical Union (AGU), European Association of Geoscientists and Engineers (EAGE), Institute of Electrical and Electronics Engineers (IEEE), Society of Exploration Geophysicists (SEG), Society for Industrial and Applied Mathematics (SIAM).

- Reviewer of research articles for *AAPG Bulletin*, *Applied Sciences*, *Bulletin of the Seismological Society of America*, *Chinese Journal of Oceanology and Limnology*, *Communications in Mathematical Sciences*, *Computational and Mathematical Methods in Medicine*, *Computational Geosciences*, *Computers & Geosciences*, *Computer Methods in Applied Mechanics and Engineering*, *Earthquake Science*, *Exploration Geophysics*, *Frontiers of Information Technology & Electronic Engineering*, *Geophysical Journal International*, *Geophysics*, *Geophysical Prospecting*, *Geophysical Research Letters*, *IEEE Geoscience and Remote Sensing Letters*, *IEEE Signal Processing Letters*, *IEEE Transactions on Geoscience and Remote Sensing*, *International Journal of Robust and Nonlinear Control*, *Inverse Problems*, *Inverse Problems in Science & Engineering*, *Journal of Applied Geophysics*, *Journal of Geophysics and Engineering*, *Journal of Computational Physics*, *Journal of Seismic Exploration*, *Mathematical Problems in Engineering*, *Near Surface Geophysics*, *Netherlands Journal of Geosciences*, *Neural Computing & Applications*, *Numerical Algorithms*, *Petrophysics*, *Pure and Applied Geophysics*, *Quarterly Journal of Mechanics and Applied Mathematics*, *Recent Patents on Signal Processing*, *SIAM Journal on Scientific Computing*, *SPE Journal*, *SPE Reservoir Evaluation & Engineering*, *Wave Motion*
- Reviewer of grant proposals for Israel Science Foundation, Natural Sciences and Engineering Research Council of Canada (NSERC), National Science Foundation (NSF), Netherlands Organisation for Scientific Research (NWO), Pazi Foundation (UPBC/IAEC), Petroleum Research Fund (American Chemical Society)
- Associate Editor of *IEEE Transactions on Geoscience and Remote Sensing*, Geophysical Data Processing 2020–Present
- Guest Associate Editor of *Geophysics*, special section on Advances in Mathematical Geophysics 2021–2022
- Guest Associate Editor of *Interpretation*, special section on Automated Approaches to Interpretation 2021–2022
- Guest Editor of *IEEE Signal Processing Magazine*, special issue on Subsurface Exploration in the Information Age 2017–2018
- Guest Associate Editor of *Geophysics*, special section on Reproducible Research: Geophysics Papers of the Future 2016–2017
- Guest Associate Editor of *Interpretation*, special section on Computer-Assisted Seismic Interpretation Methods 2016–2017
- Guest Associate Editor of *Geophysics*, special issue on Signal and Noise Separation 2014–2015
- Guest Associate Editor of *Interpretation*, special section on Petroleum Geomechanics and Fracture Interpretation 2014–2015
- Guest Associate Editor of *Interpretation*, special section on Thin Beds 2014–2015
- Guest Associate Editor of *Interpretation*, special section on Diffraction Imaging 2013–2014
- Guest Editor of *International Journal of Geophysics*, special issue on Seismic Imaging 2010–2011

- Guest Associate Editor of *Geophysics*, special issue on Seismic Data Sampling 2009–2010
- Guest Editor of *Computing in Science and Engineering*, special issue on Reproducible Research 2008–2009
- Associate Editor of *Geophysics*, Seismic Migration and Signal Processing 2004–2009
- Member of the SEG North American Regional Advisory Committee 2021–Present
- Member of the EAGE Education Committee 2020–Present
- Chair of the SEG Publications Committee 2013–2015, 2019–2021
- SEG Vice-President for Publications (elected) 2017–2019
- Co-Chair of the SEG Technical Program Committee 2016–2017
- Chair of the SEG Distinguished Lecturer Committee 2015–2017
- Member of the SEG Distinguished Lecturer Committee 2012–Present
- Member of the SEG Publications Committee 2008–2021
- Member of the SEG Publication Policy Committee 2007–2010, 2013–2015
- District Representative of the SEG Council (elected) 2008–2010, 2011–2013
- Chair of the SEG Technical Program Committee 2011
- Chair of the SEG Translations Committee 2007–2010
- Member of the SEG Translations Committee 2000–2012
- Member of the SEG Online Committee 2004–2007
- Member of the SEG Technical Program Committee 2007
- Session Chair, EAGE Annual Meeting 2011, 2014–2015
- Session Chair, SEG Annual Meetings 2004–2005, 2008–2010, 2013, 2016
- Creator and project manager of SEG $\text{\TeX}$ , an open-source  $\text{\LaTeX}$  package for geophysical publications <http://www.ahay.org/wiki/SEGTeX> 2001–Present
- Creator and project manager of MADAGASCAR, an open-source software package for geophysical data analysis <http://www.ahay.org> 2003–Present
- Member of the Technical Program Committee, Energy In Data Conference 2020–Present
- Co-organizer of SEG Workshop *Machine Learning Blind-test Challenge* (jointly with D. Bevc, A. Halpert, F. Herrmann, C. Esmersoy, and B. Power) 2020
- Member of the Organizing Committee, Energy In Data Conference 2019–2020
- Co-chair of the SEG 3rd International Workshop on Mathematical Geophysics: Traditional vs. Learning (jointly with J. Ma, M. Sacchi, and R. Wu) 2019

- Co-organizer of minisymposium *Advances in Seismic Imaging and Inversion* at the SIAM Conference on Imaging Science (jointly with L. Demanet and M. Sacchi) 2018
- Co-organizer of Madagascar School in Shanghai (jointly with J. Chen) 2017
- Co-organizer of Madagascar School in Houston (jointly with K. Schleicher and W. Zhang) 2017
- Co-organizer of Madagascar School in Zurich (jointly with F. Broggin and J. Shragge) 2016
- Co-organizer of EAGE Workshop *Open-source Software in Applied Geosciences* (jointly with F. Broggin, T. Günther, and R. Hewett) 2016
- Chair of the Organizing Committee, 17th International Workshop on Seismic Anisotropy (IWSA) 2015-2016
- Member of the Organizing Committee, SIAM Conference on Imaging Science 2015-2016
- Co-organizer of SEG Workshop *Rank-Reduction and Other Sparse Transform Methods with Application to Data Reconstruction, De-Noising, De-Blending and Imaging* (jointly with R. Abma, S. Aeron, A. Ramirez, and M. Sacchi) 2015
- Co-organizer of SEG Workshop *De-Primary-Removing Negative Effects of Seismic Reflections* (jointly with T. Fei, M. Fehler, T. J. Moser, and M. Popovici) 2015
- Co-organizer of minisymposium *Sparsity-Promoting Seismic Data Analysis* at the 8th International Congress on Industrial and Applied Mathematics (jointly with J. Ma) 2015
- Co-organizer of Madagascar School for Advanced Users in Qingdao (jointly with Q. Du, G. Fang, and Y. Liu) 2015
- Co-organizer of minisymposium *Advances in Software for Computational Geosciences* at the SIAM Conference on Mathematical and Computational Issues in the Geosciences (jointly with R. Hewett) 2015
- Co-organizer of Madagascar School in Harbin (jointly with Y. Liu and J. Shragge) 2015
- Co-organizer of International Workshop on Mathematical Geophysics (jointly with J. Ma, M. Sacchi, and R.-S. Wu) 2014-2015
- Co-organizer of SEG Workshop *Latest Developments in Time-Frequency Analysis* (jointly with J-B. Tary and M. van der Baan) 2014
- Co-organizer of Madagascar Working Workshop (jointly with W. Symes) 2014
- Co-organizer of ASEG Workshop *Madagascar (Open Source Processing)* (jointly with J. Shragge) 2013
- Co-organizer of School on Reproducible Computational Geophysics in Austin (jointly with S. Li and P. Sava) 2012
- Co-organizer of School on Reproducible Computational Geophysics in Beijing (jointly with Y. Liu, Y. Liu, and Y. Wang) 2011

- Co-organizer of minisymposium *Gaussian Beams in Seismology* at the SIAM Conference on Mathematical and Computational Issues in the Geosciences (jointly with N. Tanushev) 2011
- Co-organizer of PTTC Workshop on Reproducible Computational Geophysics (jointly with P. Sava and I. Vlad) 2010
- Co-organizer of EAGE Workshop *Migration Velocity Analysis in Anisotropic Media* (jointly with T. Alkhalifah, F. Audebert, and P. Fowler) 2010
- Organizer of minisymposium *Regularization Strategies in Applied Geophysical Inverse Problems* at the Applied Inverse Problems conference 2009
- Co-organizer of minisymposium *Mathematical and Computational Problems of Time-domain Seismic Imaging* at the SIAM Conference on Mathematical and Computational Issues in the Geosciences (jointly with J. Schleicher) 2009
- Co-organizer of Madagascar School on Reproducible Computational Geophysics (jointly with P. Sava and I. Vasconcelos) 2009
- Co-organizer of EAGE Workshop *Reconstruction, Recovery and Interpolation of Multi-dimensional Seismic Wave Fields* (jointly with M. Sacchi and S. Spitz) 2009
- Co-organizer of Workshop *Gaussian Beams with Application to Seismology* (jointly with B. Engquist and R. Tsai) 2007
- Co-organizer of School and Workshop *Reproducible Research in Computational Geophysics* (jointly with F. Herrmann and P. Sava) 2006
- Organizer of minisymposium *Geoscience Applications of Dijkstra-Like Methods for Solving Hamilton-Jacobi Equations* at the SIAM Conference on Mathematical and Computational Issues in the Geosciences 2003
- Co-organizer of minisymposium *Seismic Velocity Analysis* at the SIAM Conference on Mathematical and Computational Issues in the Geosciences (jointly with W. Symes) 2003
- Co-organizer of SEG Workshop *Synthetic Seismograms for Processed Seismic Data and for Seismic Field Data* (jointly with M. Backus and T. Stark) 2003

### University Service

- Co-founder and director of the Texas Consortium for Computational Seismology (jointly with B. Engquist) 2011–Present
- Member of the Midscale Computing Infrastructure Committee  
Jackson School of Geosciences 2021–Present
- Member of the Graduate Studies Subcommittee  
Oden Institute for Computational Engineering and Sciences 2017–2020
- Chair of the Appointments Committee  
Jackson School of Geosciences 2018–2019
- Member of the Steering Committee, Scientific Software Days 2015–2018

- Member of Energy Theme Executive Committee,  
Jackson School of Geosciences 2012–2018
- Member of the Appointments Committee  
Jackson School of Geosciences 2016–2017
- Member of the Exploration Geophysics Faculty Search Committee 2014–2015
- Member of the Comprehensive Periodic Review Committee,  
Department of Geological Sciences 2014–2015
- Chair of the Promotion Advisory Committee, Bureau of Economic Geology 2014–2015
- Member of the Geophysics Faculty Search Committee 2013–2014
- Member of the Promotion Advisory Committee, Bureau of Economic Geology 2012–2013
- Co-organizer of Annual *Scientific Software Days*  
(jointly with V. Eijkhout, A. Terrel, and M. Tobis) 2007–2013
- Member of the Ad-Hoc Committee on GSC membership 2012
- Member of the Computational Geosciences Committee 2011–2012
- Member of the KAUST-AEA Faculty Search and Curriculum Committees 2008–2010
- Member of the Jackson School Strategic Council 2007–2010
- Member of the Exploration Geophysics Faculty Search Committee 2007–2009

### **Grants**

1. Texas Consortium for Computational Seismology 2011–Present  
(Co-P.I.: B. Engquist) \$3,380,000  
Multiple Industrial Sponsors
2. Data Sets for the Acceleration of AI/ML Derived Segmentation of Geologic Properties and Interpretation 2021–2022  
(Co-P.I.: D. Dunlap) \$399,159  
SEAM (SEG Advanced Modeling Corporation)
3. Using Deep Learning to Accelerate Time-Lapse Seismic Data Inversion Workflow for Reservoir Parameter Estimation in Carbon Dioxide Sequestration Studies 2021–2022  
(Fellowship for H. Kaur) \$66,323  
Equinor
4. Elastic Multi-parameter Waveform Inversion for Subsalt Imaging 2016–2018  
(Fellowship for Z. Xue) \$123,080  
Statoil
5. Path-Integral Seismic Diffraction Imaging of Fractured Shale Reservoirs 2016–2018  
(Fellowship for D. Merzlikin) \$123,080  
Statoil



6. Characterization of Fractured Shale Reservoirs Using Anelliptic Parameters (Fellowship for Y. Sripanich) Statoil	2015–2017 \$123,014
7. Phase Correction of Prestack Seismic Data Using Local Attributes BP America	2014–2016 \$65,556
8. High-Resolution Imaging of the Barrolka Dataset Using Diffraction Attributes GeoFrac Consortium, University of Adelaide, Australia	2014–2015 \$53,213
9. Lowrank Reverse Time Migration for Subsalt Imaging (Fellowship for J. Sun) Statoil	2013–2016 \$175,749
10. High-resolution Seismic Attributes for Fracture Characterization in Grosmont (Co-P.I.: P. Eichhubl) Shell	2012–2014 \$488,243
11. Waveform Tomography with Cost-function in the Image Domain (Fellowship for S. Li) Statoil	2012–2014 \$116,000
12. Extracting Seismic Events by Predictive Painting and Time-Warping Statoil	2012–2015 \$262,451
13. Seismic Wave Focusing for Subsurface Imaging and Enhanced Oil Recovery (Co-P.I.: C. Huh, L. Kallivokas, L. Ying) KAUST	2011–2014 \$1,498,259
14. Unconventional Resources: Geophysics, Phase II (Lead P.I: E. Potter) ExxonMobil	2011–2013 \$216,082
15. Near Surface Velocity Estimation (Co-P.I.: T. Alkhalifah) Saudi Aramco and KAUST	2010–2012 \$103,848
16. Seismic Sedimentology of Non-Marine Songliao Basin (Lead P.I.: H. Zeng) PetroChina RIPED	2010–2012 \$364,329
17. Enhanced Seismic Imaging of Land Data BGP International	2010–2011 \$125,000
18. Source-receiver Wave Extrapolation (Co-P.I.: T. Alkhalifah, L. Ying) KAUST	2010–2011 \$268,136
19. Multiazimuth Seismic Diffraction Imaging (Co-P.I.: P. Eichhubl) Research Partnership to Secure Energy for America	2009–2012 \$1,105,000
20. Unconventional Resources: Computational Geophysics (Lead P.I: E. Potter) ExxonMobil and Jackson School of Geosciences	2009–2011 \$337,000
21. Fast Beam Migration Saudi Aramco and Z-Terra	2010 \$50,199

22. Attenuation of diffraction multiples ConocoPhillips	2009–2010 \$83,164
23. Subsalt Seismic Imaging Using Levelset Methods Hess and Total E&P USA	2008–2011 \$600,000
24. Seismic Data Regularization and Noise Attenuation Using Transform Methods BGP International	2007–2009 \$250,000
25. Improving Wave Fidelity of Gaussian Beams (co-P.I.: B. Engquist, R. Tsai) Chevron ETC	2007–2009 \$450,000
26. Seismic Reservoir Characterization Using Diffraction Imaging Total E&P	2007 \$45,000
27. Full Waveform Inversion of Angle Gathers (co-P.I.: M. Sen) Shell E&P and Jackson School of Geosciences	2006–2007 \$500,000
28. Coronation Multicomponent Study (Lead P.I.: M. Tomasso, Co-P.I.: O. Ghattas) Apache Corporation, GXT Input/Output, and Jackson School of Geosciences	2006–2007 \$240,000
29. Seismic Imaging by Riemannian Wavefield Extrapolation ExxonMobil URC	2004–2006 \$284,118
30. Multiple Elimination Using Plane-Wave Construction Norsk Hydro	2005–2006 \$60,401
31. Wave-Equation Velocity Analysis (Lead P.I.: P.Sava) BP America Production Company and Jackson School of Geosciences	2005–2006 \$125,000
32. Differential Azimuth Moveout, Phase II Total E&P	2005–2006 \$45,000
33. Petrophysical Analysis of Multicomponent Seismic Data U.S. Department of Energy STTR/SBIR and 3DGeo Development	2004–2005 \$40,000
34. Narrow Azimuth Migration Petroleum Geo-Services	2004 \$80,000
35. Differential Azimuth Moveout Total E&P	2003–2005 \$33,392