

# Paul C. Sava

*Center for Wave Phenomena, Department of Geophysics, Colorado School of Mines, Golden, CO 80401*  
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SCIENTIFIC INTERESTS	Wavefield seismic imaging (migration, tomography, multicomponent, microseismic), seismoelectric imaging, radar imaging and tomography, stochastic inversion, high-performance scientific computing, autonomous robotic acquisition
RESEARCH CENTER	<b>Center for Wave Phenomena, Colorado School of Mines</b> <b>co-Principal Investigator</b> <i>from 1/2006</i>
EDUCATION	<ul style="list-style-type: none"><li>• <b>Ph.D. (Geophysics)</b>, Stanford University <i>1/2005</i></li><li>• <b>M.Sc. (Geophysics)</b>, Stanford University <i>10/1998</i></li><li>• <b>B.Sc. (Geophysics)</b>, University of Bucharest <i>6/1995</i></li></ul>
PROFESSIONAL EXPERIENCE	<ul style="list-style-type: none"><li>• <b>Professor</b> <i>from 4/2018</i> Colorado School of Mines</li><li>• <b>Green Chair of Exploration Geophysics</b> <i>from 6/2015</i> Colorado School of Mines</li><li>• <b>Director</b> <i>8/2014–8/2018</i> Center for Wave Phenomena</li><li>• <b>Associate Professor</b> <i>4/2011–4/2018</i> Colorado School of Mines</li><li>• <b>Visiting Professor</b> <i>8/2013–8/2014</i> Stanford University</li><li>• <b>Assistant Professor</b> <i>1/2006–3/2011</i> Colorado School of Mines</li><li>• <b>Research Associate</b> <i>11/2004–1/2006</i> University of Texas (Austin)</li><li>• <b>Geophysicist</b> <i>4/2002–6/2002</i> BP Upstream Technology</li><li>• <b>Software Support Geoscientist</b> <i>3/1995–6/1997</i> Schlumberger GeoQuest</li></ul>
HONORS & AWARDS	<ul style="list-style-type: none"><li>• <b>Reginald Fessenden Award</b> <i>2007</i> for the development of angle-domain wave-equation common-image gathers Society of Exploration Geophysicists</li><li>• <b>Honorable Mention for best paper</b> in <i>Geophysics</i> <i>2004</i> for <i>Angle-domain common-image gathers by wavefield continuation methods</i> (co-authored with Sergey Fomel) Society of Exploration Geophysicists</li><li>• <b>Top 30 (~ 3%) presentation</b> at the Annual Convention of the Society of Exploration Geophysicists</li></ul>

8. ★ *Multicomponent distributed acoustic sensing* 2016  
(Lim, Sava)
  7. ★ *Converted-waves imaging condition for elastic reverse-time migration* 2014  
(Duan, Sava)
  6. *Uncertainty maps for seismic images by geostatistical model randomization* 2014  
(Li, Caers, Sava)
  5. *Efficient computation of extended images by wavefield-based migration* 2009  
(Sava, Vasconcelos)
  4. *Stereographic imaging condition for wave-equation migration* 2007  
(Sava)
  3. *Adjoint wave-equation velocity analysis* 2006  
(Albertin, Sava, Etgen, Maharramov)
  2. *Wavefield extrapolation in Riemannian coordinates* 2004  
(Sava, Fomel)
  1. *Wave-equation migration velocity analysis* 1999  
(Biondi, Sava)
- **Award of merit for best student paper**  
at the Annual Convention of the Society of Exploration Geophysicists
    3. *Wavefield extrapolation in Riemannian coordinates* 2004  
(Sava, Fomel)
    2. *Amplitude-preserved common-image gathers by wave-equation migration* 2001  
(Sava, Fomel, Biondi)
    1. *Wave-equation migration velocity analysis* 1999  
(Biondi, Sava)
  - **Outstanding Geophysics Faculty** 2012  
Colorado School of Mines
  - **Jackson young scientist fellowship** 2005–2006  
University of Texas (Austin)
  - **Stanford graduate fellowship** 1997–2000  
Stanford University
  - **Green fellowship** 1998–1999  
Stanford University
  - **Chevron fellowship** 1997–1998  
Stanford University
  - **Commencement Valedictorian** 1995  
University of Bucharest, Faculty of Geology and Geophysics
  - **Romanian Government fellowship** 1991–1995  
University of Bucharest, Faculty of Geology and Geophysics
  - **Ivan Lim, Best Student Poster Paper** 2016  
for *Multicomponent distributed acoustic sensing*  
Society of Exploration Geophysicists

ADVISEE  
AWARDS

TEACHING  
EXPERIENCE

- **Python compyting: Building a sensor system (CSM)** *from 2018*  
CS/GP undergraduate (required)
- **Inversion (CSM)** *from 2010*  
GP undergraduate (required)
- **Seismic wavefield imaging (CSM)** *from 2006*  
GP graduate (elective)
- **Introduction to seismic exploration (CSM)** *2006-2018*  
GP undergraduate (required)
- **Wavefield seismic imaging (UT Austin)** *2005*  
GP graduate (elective)

PROFESSIONAL  
SERVICE

- **Chair**, EAGE Student Fund Board *from 2014*  
European Association of Geoscientists and Engineers
- **Education Officer**, EAGE Board *2012-2016*  
European Association of Geoscientists and Engineers
- **Member** of the Research Committee *2009-2012*  
European Association of Geoscientists and Engineers
- **Member** of the Online Education Task Force *2007*  
Society of Exploration Geophysicists

UNIVERSITY  
SERVICE

- **Member** of the Research Advisory Board *from 9/2018*
- **Member** of the Space Resources Program Steering Committee *from 8/2017*
- **Advisor** of the Society of Women in Geophysics *from 8/2014*
- **Member** of CSM Computer Science search committee *2017-2018*
- **Member** of the CSM VP Research/Technology Transfer search committee *2017*
- **Member** of the CSM Graduate Dean search committee *2017*
- **Chair** of the CSM Reimagine Geophysics committee *2016-2017*
- **Member** of the CSM Mining Banfield Chair search committee *8/2016-3/2017*
- **Member** of the CSM Geophysics Graduate Advisory committee *8/2009-1/2017*
- **Member** of the CSM Research Task Force *5/2015-8/2016*
- **Member** of CSM Geophysics Department Head search committee *1/2016-12/2016*
- **Chair** of CSM Geophysics faculty search committees *'07, '08, '11, '15, '16*
- **Member** of CSM Geophysics faculty search committee *'17*
- **Chair** of the CSM Geophysics Graduate Advisory committee *8/2009-6/2013*
- **Member** of the CSM Graduate Council *8/2009-6/2013*
- **Member** of the CSM committee on High Performance Computing *2008-2010*
- **Member** of the CSM Geophysics ABET accreditation committee *2007-2013*
- **Advisor** of the CSM Society of Student Geophysicists *2007-2013*
- **Member** of the CSM Honors and Awards committee *2007-2010*

REVIEW  
PANELS

- **Referee**, tenure & promotion *2018*  
United Arab Emirates University
- **Referee**, research proposals *from 2017*  
National Aeronautics and Space Administration
- **Referee**, research proposals *from 2017*  
Oak Ridge Associated Universities
- **Referee**, research proposals *from 2017*  
Netherlands Organisation for Scientific Research
- **Referee**, research proposals *from 2017*  
German Research Foundation (Deutsche Forschungsgemeinschaft)
- **Referee**, tenure & promotion *2017*  
King Fahd University of Petroleum & Minerals
- **Referee**, tenure & promotion *2016*  
University Of Texas (Dallas)
- **Referee**, tenure & promotion *2013 & 2014*  
University of Western Australia
- **Referee**, research proposals *from 2013*  
Natural Sciences and Engineering Research Council of Canada
- **Referee**, tenure & promotion *2006 & 2010*  
Stanford University

CONFERENCE  
SERVICE

- **Co-organizer** of “Understanding the uncertainty in seismic images” *2016*  
SEG workshop at the Annual Convention
- **Member** of the Technical Program Committee *2016*  
SEG/EAGE Summer Research Workshop
- **Co-organizer** of “Adaptive Seismic Imaging” *2015*  
SEG workshop at the Annual Convention
- **Member** of the Technical Program Committee *2014*  
EAGE Conference and Exhibition, Saint Petersburg, Russia
- **Co-organizer** of “Gathers for Modern Migration Algorithms” *2013*  
SEG workshop at the Annual Convention
- **Member** of the Technical Program Committee *2012*  
SEG/EAGE Summer Research Workshop, Charleston, SC
- **Member** of the Technical Program Committee *2012*  
EAGE/ACGGP Latin American Geophysics Workshop, Cartagena, Columbia
- **Member** of the Technical Program Committee *2010*  
SEG Annual Convention, Denver, CO
- **Member** of the Technical Program Committee *2008*  
SEG Annual Convention, Las Vegas, NV
- **Co-organizer** of “Wavefield imaging and interferometry minisymposium” *2007*  
SIAM Conference on Mathematical and Computational Issues  
in the Geosciences, Santa Fe, NM

COMPUTING  
WORKSHOPS

- **Co-Convener & Instructor**  
*Madagascar School on Reproducible Computational Geophysics*  
[www.ahay.org/wiki/Conferences](http://www.ahay.org/wiki/Conferences)
- 9. Saint Petersburg, Russia 4/2014
- 8. Austin, TX 7/2012
- 7. Beijing, China 7/2011
- 6. Houston, TX 7/2010
- 5. Salvador, Brazil 8/2009
- 4. Delft, the Netherlands 6/2009
- 3. Golden, CO 5/2008
- 2. Austin, TX 4/2007
- 1. Vancouver, Canada 8/2006

EDITORIAL  
SERVICE

- **Guest Editor**, *The Leading Edge (Imaging Migration)* 2014
- **Editorial Board**, *Journal of Seismic Exploration* 2005–2012
- **Editorial Board**, *Journal of Applied Geophysics* 2006–2012
- **Associate Editor**, *Geophysics (Letters)* 2005–2009
- **Guest Editor**, *The Leading Edge (High Performance Computing)* 2010
- **Reviewer**
  - *Advances in Space Research* from 2017
  - *Journal of Petroleum Exploration and Production Technology* from 2010
  - *Geophysical Prospecting* from 2007
  - *Inverse Problems* from 2006
  - *Geophysical Journal International* from 2006
  - *Wave Motion* from 1999
  - *Geophysics* from 1998
  - *Bulletin of the Seismological Society of America* from 1998

RESEARCH  
FUNDING

- **High resolution 3D imaging of SHARAD data** 7/2019-6/2022  
co-I Putzig (PSI), Foss (Freaqs), Perry (PSI)  
\$22k, NASA
- **Investigation of Mars Interior based on 3D Simulations of Seismic Wave Propagation** 8/2018–8/2022  
PI Ebru Bozdogan  
\$203k (\$11k), NASA
- **Exploring submarine slope failures with seismic data and physical laboratory experiments** 5/2018–5/2021  
PI Brandon Dugan  
\$291k, NSF
- **Seismic Orbital Laser Vibrometer (SOLVE)** 1/2018–12/2019  
co-I Erik Asphaug (UoA)  
\$244k, NASA
- **Seismic inverse methods for complex structures** 2017–present  
co-PI with Jeffrey Shragge, Roel Snieder and Ilya Tsvankin  
\$1,200k/year, industrial consortium

- **Seismic inverse methods for complex structures** 2015–2017  
co-PI with Roel Snieder and Ilya Tsvankin  
\$1,200k/year, industrial consortium
  - **Seismic inverse methods for complex structures** 2006–2015  
co-PI with Dave Hale, Roel Snieder and Ilya Tsvankin  
\$1,200k/year, industrial consortium
  - **Anisotropic velocity analysis by wave-equation migration** 7/2012–6/2014  
\$200k, KACST
  - **Radar Imaging of Asteroid and Comet Interiors** 9/2011–9/2014  
PI Robert Grimm  
\$120k, NASA
  - **Wavefield tomography model building** 9/2011–9/2012  
\$63k, BP
  - **Migration and velocity analysis with reverse-time imaging** 7/2008–6/2012  
\$420k, Eni
  - **Locating micro-seismicity using interferometric imaging** 1/2008–1/2010  
co-PI with Roel Snieder  
\$120k, ExxonMobil
  - **Micro-seismic imaging in noisy environments** 6/2009–6/2010  
co-PI with Dag Numedal et al.  
\$120k, RPSEA
  - **Wave-equation migration velocity analysis** 10/2007–9/2010  
\$152k, Statoil
  - **Wave-equation migration velocity analysis** 6/2005–6/2006  
\$75k, BP
- INTELLECTUAL PROPERTY
- **Virtual electrode current injection using seismic focusing and seismoelectric conversion** 10/16/2012  
P. C. Sava, A. Revil,  
US 20140104980 A1.
  - **Wave-equation migration velocity analysis using image warping** 7/12/2011  
P. C. Sava, F. Perrone, C. Andreoletti, N. Bienatti,  
US 14/131,962, WO 2013009944 A1 & EP 2732312 A1.

STUDENTS  
ADVISED

**PhD**

11. Iga Pawelec, *TBD* from 2018
10. Odette Aquino, *Wavefield tomography with petrophysical constraints* from 2018
9. Colton Kohnke, *Localized time-lapse wavefield tomography* from 2017
8. Thomas Rapstine, *Contactless seismic data acquisition* from 2015
7. Ivan Lim Chen Ning, *Multicomponent Distributed Acoustic Sensing* from 2015
6. Daniel Rocha, *Wavefield imaging in the energy norm* 2014–2018
5. Esteban Diaz, *Extended imaging and tomography under two-way operators* 2013–2016
4. Yuting Duan, *Elastic wavefield migration and tomography* 2012–2016
3. Francesco Perrone, *Velocity analysis by image warping* 2008–2013
2. Tongning Yang, *Image-domain wavefield tomography* 2008–2013
1. Jia Yan, *Wave-mode separation in anisotropic elastic media* 2007–2010

## MSc

10. Samuel Courville, *Seismic imaging using laser Doppler vibrometry* from 2017
9. Iga Pawelec, *Uncertainty quantification in seismic imaging* 2016-2018
8. Lucas Almeida, *Data interpolation using sparsity constraints* 2015-2017
7. Detchai Ittharat, *Radar imaging inside asteroids and comets* 2013-2014
6. Esteban Diaz, *Wavefield imaging with backscattered energy* 2011-2013
5. Ashley Fish, *Velocity analysis for microseismic imaging* 2011-2012
4. Jeff Godwin, *Seismic imaging with blended sources* 2009-2011
3. Thomas Cullison, *An image-guided method for picking CIP gathers* 2009-2011
2. Ran Xuan, *Bayesian micro-earthquake location* 2007-2009
1. Gabriela Melo, *Wide-azimuth angle decomposition* 2006-2008

## BSc

5. Samuel Courville, *Mars subsurface imaging/acquisition concept* 2016-2017
4. Dana Sirota, *Drone-based GP data acquisition* 2015-2017
3. Alicia Johnson, *Autonomous GPR acquisition* 2015-2016
2. Detchai Ittharat, *Radar imaging inside asteroids and comets* 2011-2012
1. Trevor Irons, *Stream computing for seismic data processing* 2006-2007

## GRADUATE COMMITTEES

### • PhD committees

33. Aleksei Titov from 2018
32. Elizabeth Maag from 2017
31. Alex Jia from 2016
30. Azar Hasanov from 2016
29. Oscar Jarillo from 2015
28. Tong Bai 2015-2019
27. Lia Lajoie 2016-2019
26. Vladimir Li 2014-2018
25. Aline Melo 2015-2018
24. Paul El Khoury 2014-2018
23. Kendra Johnson 2013-2017
22. Xinming Wu 2014-2015
21. Junwei Zhang 2013-2015
20. Justin Rittgers 2011-2015
19. Jieyi Zhou 2013-2014
18. Chinaemerem Kanu 2011-2014
17. Allison Knaak 2011-2014
16. William Woodruff 2011-2014
15. Jiajia Sun 2010-2014
14. Cericia Martinez 2010-2015
13. Luming Liang 2010-2014
12. Patricia Evelyn Rodrigues 2010-2014

11. Norimitsu Nakata	2011–2013
10. Harry Mahardika	2010–2013
9. Filippo Broggin	2009–2013
8. Trevor Irons	2008–2013
7. Xiaoxiang Wang	2007–2012
6. Mamoru Takanashi	2009–2011
5. Werner Heigl	2007–2011
4. Youngzhong Fan	2007–2010
3. Ritupama Sarkar	2007–2010
2. Barry Kirkendall	2006–2007
1. Kurang Mehta	2006–2007

• **MSc committees**

19. Samir Jreij	2017-2018
18. Thanyanat Akarapatima	2017–2018
17. Andrew Pare	2016–2017
16. Jacob Utley	2016–2017
15. Colton Kohnke	2015–2016
14. Jarred Eppehimer	2015–2016
13. Staci Mueller	2015–2016
12. Emily Butler	2015–2016
11. Oscar Jarillo	2013–2015
10. Paul El Khoury	2013–2014
9. Guillaume Barnier	2012–2013
8. Luiz Marcelo Martins	2012–2013
7. Julio Frigerio	2010–2012
6. Isabel White	2011–2012
5. Christopher Engelsma	2009–2010
4. Ali Araji	2009–2010
3. Yongxia Liu	2008–2010
2. Yong Ma	2007–2010
1. John Mathewson	2007–2008

EXTERNAL  
COMMITTEES

- Irakarama Modeste, PhD, **University of Lorraine** *from 2016*  
*Reduction of structural uncertainties associated with faults by waveform inversion.*
- Fang Wang, PhD, **MinesParisTech** *2014–2015*  
*Waveform inversion based on wavefield decomposition.*



75. P. C. Sava, E. Asphaug, Seismology on small planetary bodies by orbital Laser Doppler Vibrometry, *Advances in Space Research*, submitted for publication
74. J. He, D. R. P. Lesser, P. C. Sava, W. Lesser, Least-squares reverse time migration (LSRTM) for damage imaging using Lamb waves, *Smart Materials and Structures*, submitted for publication
73. ★ D. Rocha, P. C. Sava, Elastic reflection waveform inversion with petrophysical model constraints, *Geophysics*, submitted for publication
72. Y. Yue, P. C. Sava, Z. Qian, J. Yang, Elastic least-squares Gaussian beam migration, *Geophysics*, submitted for publication
71. ★ D. Rocha, P. C. Sava, J. Shragge, B. Witten, 3D passive wavefield imaging using the energy norm, *Geophysics*, in press
70. M. Irakarama, G. Caumon, P. C. Sava, J. Edwards, Appraising structural interpretations using seismic data – theoretical elements, *Geophysics*, in press
69. ★ I. Lim, P. C. Sava, High-resolution multicomponent distributed acoustic sensing, *Geophysical Prospecting* 66 (2018a) 1111–1122, doi: \bibinfo{doi}{10.1111/1365-2478.12634}
68. P. C. Sava, E. Asphaug, 3D radar wavefield migration of comet interiors, *Advances in Space Research* 62 (2018b) 1146–1164, doi: \bibinfo{doi}{10.1016/j.asr.2018.06.009}
67. P. C. Sava, E. Asphaug, 3D radar wavefield tomography of comet interiors, *Advances in Space Research* 61 (2018c) 2198–2213, doi: \bibinfo{doi}{10.1016/j.asr.2018.01.040}
66. ★ D. Rocha, P. C. Sava, Elastic least-squares reverse time migration using the energy norm, *Geophysics* 83 (3) (2018b) S237–S248, doi: \bibinfo{doi}{10.1190/GEO2017-0465.1}
65. ★ D. Rocha, A. Guitton, P. C. Sava, 3D acoustic least-squares reverse time migration using the energy norm, *Geophysics* 83 (3) (2018b) S261–S270
64. ★ T. Rapstine, P. C. Sava, E. Arias, Airborne seismic acquisition using stereo vision, *Journal of Unmanned Vehicle Systems* 6 (1) (2017) 31–42, doi: \bibinfo{doi}{10.1139/juvs-2017-0019}
63. ★ I. Lim, P. C. Sava, Multicomponent distributed acoustic sensing: Concept and theory, *Geophysics* 83 (2) (2018b) P1–P8, doi: \bibinfo{doi}{10.1190/geo2017-0327.1}
62. ★ Y. Duan, P. C. Sava, 3D angle decomposition for elastic reverse time migration, *Geophysics* 82 (5) (2017a) S377–S389, doi: \bibinfo{doi}{10.1190/geo2016-0565.1}
61. ★ E. Diaz, P. C. Sava, Cascaded wavefield tomography and inversion using extended common image point gathers: a case study, *Geophysics* 82 (5) (2017) S391–S401, doi: \bibinfo{doi}{10.1190/geo2016-0318.1}
60. ★ Y. Duan, A. Guitton, P. C. Sava, Elastic least-squares reverse time migration, *Geophysics* 82 (4) (2017) S315–S325, doi: \bibinfo{doi}{10.1190/GEO2016-0564.1}
59. ★ D. Rocha, N. Tanushev, P. C. Sava, Anisotropic elastic wavefield imaging using the energy norm, *Geophysics* 82 (3) (2017a) S225–S234, doi: \bibinfo{doi}{10.1190/GEO2016-0424.1}
58. ★ Y. Duan, P. C. Sava, Elastic wavefield tomography with physical model constraints, *Geophysics* 81 (6) (2016a) R447–R456, doi: \bibinfo{doi}{10.1190/geo2015-0508.1}
57. ★ D. Rocha, N. Tanushev, P. C. Sava, Isotropic elastic wavefield imaging using the energy norm, *Geophysics* 81 (2016a) S207–S219
56. ★ D. Rocha, N. Tanushev, P. C. Sava, Acoustic wavefield imaging using the energy norm, *Geophysics* 81 (2016b) S151–S163

55. ★ E. Diaz, P. C. Sava, Understanding the reverse time migration backscattering: noise or signal?, *Geophysical Prospecting* 64 (2016) 581–594
54. ★ Y. Duan, P. C. Sava, Scalar imaging condition for elastic reverse-time migration, *Geophysics* 80 (2015a) S127–S136
53. ★ F. Perrone, P. C. Sava, Image-warping waveform tomography, *Geophysical Prospecting* 63 (2015a) 1050–1069, doi: \bibinfo{doi}{10.1111/1365-2478.12225}
52. ★ E. Diaz, P. C. Sava, Wavefield tomography using reverse time migration backscattering, *Geophysics* 80 (2015a) R57–R69, doi: \bibinfo{doi}{10.1190/GEO2014-0100.1}
51. ★ T. Yang, P. C. Sava, Image-domain wavefield tomography with extended common-image-point gathers, *Geophysical Prospecting* 63 (2015) 1086–1096, doi: \bibinfo{doi}{10.1111/1365-2478.12204}
50. P. E. Khoury, A. Revil, P. C. Sava, Seismoelectric beamforming imaging: a sensitivity analysis, *Geophysical Journal International* 201 (2015) 1781–1800, doi: \bibinfo{doi}{10.1093/gji/ggv117}
49. R. Grimm, D. Stillman, P. C. Sava, D. Ittharat, Radio Reflection Imaging of Asteroid and Comet Interiors II: Results and Recommendations, *Adv. Space Res.* 55 (2015) 2166–2176
48. P. C. Sava, T. Alkhalifah, Anisotropy signature in reverse-time migration extended images, *Geophysical Prospecting* 63 (2015) 271–282, doi: \bibinfo{doi}{10.1111/1365-2478.12189}
47. P. C. Sava, D. Ittharat, R. Grimm, D. Stillman, Radio reflection imaging of asteroid and comet interiors I: Acquisition and imaging theory, *Advances in Space Research* 55 (2015a) 2149–2165, doi: \bibinfo{doi}{10.1016/j.asr.2014.10.021}
46. ★ F. Perrone, J. Pannizardi, P. C. Sava, Wavefield tomography based on local image correlations, *Geophysical Prospecting* 63 (1) (2015) 35–54, doi: \bibinfo{doi}{10.1111/1365-2478.12163}
45. P. C. Sava, A. Revil, M. Karaoulis, High definition cross-well electrical resistivity imaging using seismoelectric focusing and image-guided inversion, *Geophysical Journal International* 198 (2) (2014) 880–894, doi: \bibinfo{doi}{10.1093/gji/ggu166}
44. ★ F. Perrone, P. C. Sava, C. Andreoletti, N. Bienatti, Linearized wave-equation migration velocity analysis by image warping, *Geophysics* 79 (2) (2014) S35–S46, doi: \bibinfo{doi}{10.1190/GEO2012-0526.1}
43. N. Zabotin, O. Godin, P. C. Sava, L. Zabolina, Tracing three-dimensional acoustic wavefronts in inhomogeneous, moving media, *J Comput. Acoust* 22 (2) (2014) 1450002–1–1450002–23, doi: \bibinfo{doi}{10.1142/S0218396X14500027}
42. S. Fomel, P. C. Sava, I. Vlad, Y. Liu, V. Bashkardin, Madagascar: open-source software project for multidimensional data analysis and reproducible computational experiments, *Journal of Open Research Software* 1 (1) (2013) e8, doi: \bibinfo{doi}{http://dx.doi.org/10.5334/jors.ag}
41. A. Revil, G. Barnier, M. Karaoulis, P. C. Sava, A. Jardani, B. Kulesa, Seismoelectric coupling in unsaturated porous media: theory, petrophysics, and saturation front localization using an electroacoustic approach, *Geophysical Journal International* 196 (2) (2014a) 867–884, doi: \bibinfo{doi}{10.1093/gji/ggt440}
40. ★ T. Yang, J. Shragge, P. C. Sava, Illumination compensation for image-domain wavefield tomography, *Geophysics* 78 (5) (2013) U65–U76, doi: \bibinfo{doi}{10.1190/GEO2012-0278.1}
39. J. Shragge, T. Yang, P. C. Sava, Time-lapse image-domain tomography using adjoint-state methods, *Geophysics* 78 (4) (2013a) A29–A33, doi: \bibinfo{doi}{10.1190/GEO2013-0044.1}

38. P. C. Sava, T. Alkhalifah, Wide-azimuth angle gathers for anisotropic wave-equation migration, *Geophysical Prospecting* 61 (1) (2013) 75–91, doi: \bibinfo{doi}{10.1111/j.1365-2478.2012.01024.x}
37. ★ J. Godwin, P. C. Sava, A comparison of shot-encoding schemes for wave-equation migration, *Geophysical Prospecting* 61 (1) (2013) 391–408, doi: \bibinfo{doi}{10.1111/j.1365-2478.2013.01125.x}
36. P. C. Sava, A. Revil, Virtual electrode current injection using seismic focusing and seismic-electric conversion, *Geophysical Journal International (Express Letter)* 191 (2012) 1205–1209, doi: \bibinfo{doi}{j.1365-246X.2012.05700.x}
35. ★ F. Perrone, P. C. Sava, Wave-equation migration with dithered plane waves, *Geophysical Prospecting* 60 (3) (2011) 444–465, doi: \bibinfo{doi}{10.1111/j.1365-2478.2011.01011.x}
34. N. Zobotin, O. Godin, P. C. Sava, L. Zobotina, Acoustic wavefront tracing in inhomogeneous, moving media, *J Comput. Acoust* 20 (3) (2012) 125009–1–125009–17, doi: \bibinfo{doi}{10.1142/S0218396X12500099}
33. ★ J. Yan, P. C. Sava, Elastic wave-mode separation for tilted transverse isotropy media, *Geophysical Prospecting* 60 (2012) 29–64, doi: \bibinfo{doi}{10.1111/j.1365-2478.2011.00964.x}
32. P. C. Sava, Micro-earthquake monitoring with sparsely-sampled data, *Journal of Petroleum Exploration and Production Technology* 1 (1) (2011a) 43–49, doi: \bibinfo{doi}{10.1007/s13202-011-0005-7}
31. T. Alkhalifah, P. C. Sava, Migration using a transversely isotropic medium with tilt normal to the reflector dip, *International Journal of Geophysics* doi: \bibinfo{doi}{10.1155/2011/530106}
30. ★ T. Yang, P. C. Sava, Wave-equation migration velocity analysis with time-shift imaging, *Geophysical Prospecting* 59 (2011a) 635–650, doi: \bibinfo{doi}{10.1111/j.1365-2478.2011.00954.x}
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2. P. C. Sava, Numerical studies on solving tomographic systems with iterative algorithms, in: Abstracts, Interdisciplinary Inversion Conference on Methodology, Computation and Integrated Applications, 1995
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- **Stanford Exploration Project**, Stanford University  
41 bi-annual reports published online at [sepwww.stanford.edu](http://sepwww.stanford.edu) *1997–2005*

SELECTED  
INVITED  
LECTURES

- *3D radar wavefield imaging of comet interiors*, 2018  
University of Colorado, Boulder, CO
- *Wavefield tomography of comet interiors*, 2018  
Colorado State University, Fort Collins, CO
- *Elastic wavefield tomography with physical constraints*, 2016  
Full waveform inversion workshop  
Chevron, Houston, TX
- *3D interior tomography of comets and asteroids*, 2016  
49th International Seminars on Planetary Emergencies, Erice, Italy,  
Invited presentation
- *Wavefield imaging/inversion/tomography/MVA: what is the difference?*, 2014  
SEG post-Convention workshop, Denver, CO  
Keynote presentation
- *How can seismoelectric imaging complement seismic imaging?* 2014  
Geophysics Department, Stanford University, Stanford, CA
- *Seismoelectric imaging with virtual electrodes* 2014  
Earth Resource Engineering, Stanford University, Stanford, CA
- *Wavefield Seismic Imaging in a nutshell* 2013  
Stanford Center for Reservoir Forecasting, Stanford, CA
- *Wide-azimuth wavefield imaging and tomography* 2013  
Chevron, San Ramon, CA
- *Do we really need low frequencies in waveform inversion?* 2013  
SEG Research Workshop, Muscat, Oman  
Keynote presentation
- *Wide-azimuth wavefield imaging and tomography* 2011  
ConocoPhillips, Houston, TX
- *Wavefield tomography in the image space* 2011  
BP, Houston, TX
- *Anisotropic wide-azimuth angle-domain imaging* 2011  
NTNU, Trondheim, Norway
- *Efficient wide-azimuth angle-domain imaging* 2011  
Oslo Society of Exploration Geophysicists, Oslo, Norway
- *Wide-azimuth angle-gathers for anisotropic wave-equation migration* 2011  
Geophysical Society of Houston Spring Symposium, Houston, TX
- *Wide-azimuth angle decomposition by wave-equation migration* 2011  
Uzi Egozi Memorial Subsalt Imaging Workshop, Houston, TX
- *Wavefield Seismic Imaging in a nutshell* 2011  
Colorado State University, Fort Collins, CO
- *Probabilistic imaging of induced micro-seismicity* 2010  
Colorado University, Boulder, CO
- *Wide-azimuth angle-domain imaging* 2010  
BP, Houston, TX
- *Wavefield seismic imaging* 2010  
Kyoto University, Kyoto, Japan
- *Wavefield seismic tomography using extended images* 2010  
Rensselaer Polytechnic Institute, Troy, NY

- *Extended common-image-point gathers by wave-equation migration* 2009  
Saudi Aramco, Dhahran, Saudi Arabia
- *Wave-equation imaging and angle decomposition* 2009  
WesternGeco, Houston, TX
- *Wavefield imaging with extended images* 2009  
Statoil, Trondheim, Norway
- *Extended images for wave-equation migration velocity analysis* 2009  
EAGE research workshop, Cairo, Egypt  
Keynote presentation
- *Reverse-time migration* 2009  
Brazilian Geophysical Society Congress, Salvador, Brazil
- *Wave-equation migration and velocity analysis* 2008  
Petrobras, Rio de Janeiro, Brazil
- *Interferometric wavefield imaging* 2008  
Woodside, Perth, Australia
- *Probabilistic micro-earthquake imaging* 2008  
ExxonMobil, Houston, TX
- *Wavefield imaging in complex media* 2008  
Eni S.p.A., Milan, Italy
- *Wavefield seismic imaging* 2007  
Brazilian Geophysical Society Congress, Rio de Janeiro, Brazil
- *New imaging conditions for wave-equation migration* 2007  
CGGVeritas, Houston, TX
- *Interferometric imaging condition* 2007  
BP, Houston, TX
- *Imaging conditions for wave-equation migration* 2007  
WesternGeco, Denver, CO
- *Stereographic imaging condition for wave-equation migration* 2007  
Geophysical Society of Houston, Houston, TX
- *Migration with simultaneous sources using stereographic imaging* 2007  
TGS, Houston, TX
- *Wavefield imaging in complex media* 2005  
Institute for Geophysics, Austin, TX
- *Wave-equation migration velocity analysis* 2005  
University of Texas at Austin, Austin, TX
- *Wave-equation migration velocity analysis* 2005  
Colorado School of Mines, Golden, CO  
Heiland lecture
- *Wave-equation migration velocity analysis* 2002  
Stanford University, Stanford, CA  
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- **Instructor**  
*Wavefield Seismic Imaging*  
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- 37. JOGMEC, Tokyo, Japan 8/2018
- 36. CGG, Houston, TX 8/2018
- 35. CGG, Houston, TX 8/2017
- 34. CGG, Calgary, Canada 6/2016
- 33. CGG, Houston, TX 6/2016
- 32. CGG, Houston, TX 5/2015
- 31. CGG, Houston, TX 12/2014
- 30. YPF, Buenos Aires, Argentina 7/2013
- 29. CGG, Houston, TX 7/2013
- 28. WesternGeco, Houston, TX 2/2013
- 27. MIT, Boston, MA 1/2013
- 26. Petrobras, Rio de Janeiro, Brazil 11/2012
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- 24. MIT, Boston, MA 1/2012
- 23. Petrobras, Rio de Janeiro, Brazil 11/2011
- 22. CGGVeritas, Houston, TX 6/2011
- 21. NTNU, Trondheim, Norway 5/2011
- 20. CGGVeritas, Houston, TX 2/2011
- 19. WesternGeco, Houston, TX 2/2011
- 18. ExxonMobil, Houston, TX 11/2010
- 17. JAPT, Tokyo, Japan 7/2010
- 16. Total, Pau, France 6/2010
- 15. Prospectiuni, Bucharest, Romania 6/2010
- 14. ExxonMobil, Houston, TX 8/2009
- 13. WesternGeco, Houston, TX 7/2009
- 12. ENI, Milan, Italy 6/2009
- 11. Statoil, Trondheim, Norway 6/2009
- 10. ExxonMobil, Houston, TX 5/2009
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- 7. CGGVeritas, Perth, Australia 7/2008
- 6. CGGVeritas, Kuala Lumpur, Malaysia 7/2008
- 5. CGGVeritas, Singapore, Singapore 7/2008
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- 3. CGGVeritas, Paris, France 7/2008
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OPEN-SOURCE  
SOFTWARE

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PROFESSIONAL  
MEMBERSHIP

- American Astronomical Society, Division of Planetary Sciences (AAS/DPS)
- American Geophysical Union (AGU)
- European Association of Geoscientists and Engineers (EAGE)
- Society of Exploration Geophysicists (SEG)

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