



Hossein S. Aghamiry

Curriculum vitae

📍 Potsdam, Germany
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🌐 researchgate.net/profile/Hossein_Aghamiry

Work experience

Visiting Postdoc Researcher

April 2022 - February 2023

Institut für Mathematik, Universität Potsdam, Potsdam, Germany.
Visitor in [SFB 1294](#)

Postdoc Researcher

November 2019 - February 2023

Université Côte d'Azur, Geoazur, Valbonne, France.
Co-principal investigator of [WIND project](#).

Junior geophysicist

September 2010 - June 2012

Parskani company, Iran.
QC and infield processing of 2D/3D seismic data.

Education

Ph.D. in computational Geophysics

2016 - 2019

Université Côte d'Azur, Geoazur, Valbonne, France.

In the framework of joint supervision of doctorate thesis (Cotutelle)

Thesis: Multi-parameter wavefield reconstruction inversion with the alternating-direction method of multipliers (ADMM) and compound regularization ([PDF](#)).

Thesis advisors: [Ali Gholami](#) and [Stéphane Operto](#).

Ph.D. in Geophysics - Seismology

2014 - 2019

University of Tehran, Institute of Geophysics, Tehran, Iran.

The thesis title and advisors are the same as the upper one.

M.Sc. in Geophysics - Seismology

2007 - 2010

Science and research branch of Tehran Azad University, Tehran, Iran.

Thesis: Seismic static corrections using blind channel identification. Thesis advisor: [Hamid Reza Siahkoochi](#)

B.Sc. in Physics

2003 - 2007

Bu-Ali Sina University, Hamadan, Iran.

Academic awards

One of the best-rated talks at the EAGE Annual Conference in Amsterdam (selected by the EAGE Education Committee) for "On The Robustness of Sparsity-Promoting Regularized Wavefield Inversion with Phase Retrieval against Sparse Long-Offset Acquisitions" (2022). It was recorded as E-Lecture and published on the [Learning Geoscience](#) portal of EAGE ([E-lecture](#)).

Geophysics bright spots for "On efficient frequency-domain full-waveform inversion with extended search space" by H. Aghamiry, A. Gholami, and S. Operto. *Geophysics*, 86(2), R237--R252, 2021 (2021) ([webpage](#)).

Outstanding Ph.D. Thesis Award from 30th Research Festival of the University of Tehran, Tehran, Iran (2021).

Outstanding graduated Ph.D. student of Geophysics- Seismology at the University of Tehran, Tehran, Iran (2019).

Research grants

Collaborator in the second round of the [WIND project \(2023-2025\)](#) Seismic Imaging project by Waveform Inversion of Node Data sponsored by AkerBP, ExxonMobil, Sinopec, Shell, and Petrobras. **850 k euros**. Principal investigator: [Stéphane Operto](#).

Co-principal investigator of the first round of the [WIND project \(2020-2022\)](#) Seismic Imaging project by Waveform Inversion of Node Data sponsored by Chevron, Shell, Total, and Petrobras. **540 k euros**. Principal investigator: [Stéphane Operto](#).

Collaborator in [LISAlps project](#) Probing the 3D Alpine lithosphere by full-waveform inversion of the AlpArray teleseismic data funded by Agence Nationale de la Recherche (ANR). **396.9 k euros**.

Publications in Peer-Reviewed Journals

1. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2022). Accurate 3D frequency-domain seismic wave modeling with the wavelength-adaptive 27-point finite-difference stencil: a tool for full-waveform inversion. *Geophysics*, 87(3), 1-66. ([PDF](#))
2. [Tournier, P.H.](#), Jolivet, P., Dolean, V., [Aghamiry, H. S.](#), Operto, S., & Rizzo S. (2022). Three-dimensional finite-difference & finite-element frequency-domain wave simulation with multi-level optimized additive Schwarz domain-decomposition preconditioner: A tool for FWI of sparse node datasets. *Accepted in Geophysics*, [arXiv:2110.15113](#). ([PDF](#))
3. [Aghamiry, H. S.](#), Gholami, A., Operto, S. & Malcolm, A. (2021). ADMM-based full-waveform inversion for microseismic imaging. *Geophysical Journal International*, 228(1), 259-274. ([PDF](#))
4. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2021). Complex-valued Imaging with Total Variation Regularization: An Application to Full-Waveform Inversion in Visco-acoustic Media. *SIAM Journal on Imaging Sciences*, 14(1), 58-91. ([PDF](#))
5. [Aghamiry, H. S.](#), Mamfoumbi, F., [Gholami, A.](#), & Operto, S. (2021). Efficient extended-search space full-waveform inversion with unknown source signatures. *Geophysical Journal International*, 227(1), 257-274. ([PDF](#))
6. Gholami, A., [Aghamiry, H. S.](#), & Operto, S. (2021). Extended full-waveform inversion in the time domain by the augmented Lagrangian method. *Geophysics*, 87(1), 1-15. ([PDF](#))
7. Aghazade, K, [Aghamiry, H. S.](#), [Gholami, A.](#), & Operto, S. (2021). Randomized source sketching for full waveform inversion. *IEEE Transactions on Geoscience and Remote Sensing*-doi:10.1109/TGRS.2021.3131039. ([PDF](#))
8. Aghazade, K., Gholami, A., [Aghamiry, H. S.](#), & Operto, S. (2021). Anderson accelerated augmented Lagrangian for extended waveform inversion. *Geophysics*, 87(1), 1-13. ([PDF](#))
9. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2020). On efficient frequency-domain full-waveform inversion with extended search space. *Geophysics*, 86(2), 1MA-W19. ([PDF](#))
10. [Aghamiry, H. S.](#), [Gholami, A.](#), & Operto, S. (2021). Full Waveform Inversion by Proximal Newton Method using Adaptive Regularization. *Geophysical Journal International*, 224(1), 169-180. ([PDF](#))
11. [Aghamiry, H. S.](#), [Gholami, A.](#), & Operto, S. (2020). Multiparameter wavefield reconstruction inversion for wavespeed and attenuation with bound constraints and total variation regularization. *Geophysics*, 85(4), R381-R396. ([PDF](#))
12. [Aghamiry, H. S.](#), [Gholami, A.](#), & Operto, S. (2020). Robust wavefield inversion via phase retrieval. *Geophysical Journal International*, 221(2), 1327-1340. ([PDF](#))
13. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2020). Accurate and efficient data-assimilated wavefield reconstruction in the time domain. *Geophysics*, 85(2), A7-A12. ([PDF](#))
14. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2019). Improving full-waveform inversion by wavefield reconstruction with the alternating direction method of multipliers. *Geophysics*, 84(1), R139-R162. ([PDF](#))
15. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2019). Implementing bound constraints and total-variation regularization in extended full-waveform inversion with the alternating direction method of multiplier: application to large contrast media. *Geophysical Journal International*, 218(2), 855-872. ([PDF](#))
16. [Aghamiry, H. S.](#), Gholami, A., & Operto, S. (2019). ADMM-based multi-parameter wavefield reconstruction inversion in VTI acoustic media with TV regularization. *Geophysical Journal International*, 219(2), 1316-1333. ([PDF](#))
17. [Aghamiry, H. S.](#), [Gholami, A.](#), & Operto, S. (2019). Compound regularization of full-waveform inversion for imaging piecewise media. *IEEE Transactions on Geoscience and Remote Sensing*, 58(2), 1192-1204. ([PDF](#))
18. [Gholami, A.](#), [Aghamiry, H. S.](#), & Abbasi, M. (2018). Constrained nonlinear amplitude variation with offset inversion using Zoeppritz equations. *Geophysics*, 83(3), R245-R255. ([PDF](#))
19. [Aghamiry, H. S.](#), & [Gholami, A.](#) (2018). Interval-Q estimation and compensation: An adaptive dictionary-learning approach. *Geophysics*, 83(4), V233-V242. ([PDF](#))

20. Gholami, A., & Aghamiry, H. S. (2017). Iteratively re-weighted and refined least squares algorithm for robust inversion of geophysical data. *Geophysical Prospecting*, 65, 201-215. (PDF)

* Corresponding author is indicated by underline.

Preprints

1. Aghamiry, H. S., Gholami, A., Operto, S., & Malcolm A. (2022). Localized Wavefield Inversion (LWI): an Adaptation of Multi-Block ADMM for Localized FWI. arXiv:2203.13133. (PDF)
2. Aghamiry, H. S., Gholami, A., & Operto, S. (2022). Large-scale highly-accurate extended full waveform inversion using convergent Born series. arXiv:2202.08558. (PDF)
3. Operto, S., Amestoy, P., Aghamiry, H.S., Beller, S., Buttari, A., Combe, L., Dolean, V., Gerest, M., Guo, G., Jolivet, P., L'Excellent, J.-Y., Mamfoumbi, F., Mary, T., Puglisi, C., Ribodetti, A., Tournier, P.-H. (2022). Does 3D frequency-domain FWI of full-azimuth/long-offset OBN data feasible? The Gorgon case study. arXiv:2210.16767 (PDF)
4. Wu, Yanqi, Aghamiry, H. S., Operto, S. & Ma J. (2022). Wave simulation in non-smooth media by PINN with quadratic neural network and PML condition. arXiv:2208.08276. (PDF)
5. Gholami, A., Aghamiry, H. S., & Operto, S. (2021). Multipliers waveform inversion. arXiv:2108.11267. (PDF)
6. Gholami, A., Aghamiry, H. S., & Operto, S. (2022). On the connection between WRI and FWI: Analysis of the nonlinear term in the Hessian matrix. arXiv:2206.07367 (PDF).

* Corresponding author is indicated by underline.

Presentations/Conferences

1. Aghamiry, H. S., Gholami, A., & Operto, S. (2022). Highly-Accurate Wavefield Reconstruction Inversion Using Convergent Born Series. In *83rd EAGE Annual Conference & Exhibition* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
2. Aghazade, K., Aghamiry, H. S., Gholami, A., & Operto, S. (2022). Multiparameter wavefield reconstruction inversion in elastic media using augmented Lagrangian. In *83rd EAGE Annual Conference & Exhibition* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
3. Aghazade, K., Aghamiry, H. S., Gholami, A., & Operto, S. (2022). Viscoelastic Full Waveform Inversion by Alternating Direction Method of Multipliers. In *83rd EAGE Annual Conference & Exhibition Workshop Programme* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
4. Aghazade, K., Aghamiry, H. S., Gholami, A., & Operto, S. (2022). Sketched waveform inversion (SWI): an efficient augmented Lagrangian based full-waveform inversion with randomized source sketching. In *83rd EAGE Annual Conference & Exhibition* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
5. Sonbolestan, M., Aghamiry, H. S., Gholami, A., & Operto, S. (2022). On the role of data-space Hessian in wavefield reconstruction inversion. In *83rd EAGE Annual Conference & Exhibition* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
6. Nevisi, A. R., Aghamiry, H. S., Aghazade, K., Gholami, A., & Operto, S. (2022). Improving block conjugate gradient method by randomized sketching for large-scale frequency-domain WRI. In *83rd EAGE Annual Conference & Exhibition* (Vol. 2022, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Madrid (PDF).
7. Ranjbaran, M., Aghamiry, H. S., Gholami, A., Operto, S. & Avanaki, K. (2022). High-resolution speed of sound estimation from ultrasound waves using extended full-wave inversion. In *SPIE Photonics West, San Francisco*. (PDF).
8. Ranjbaran, M., Aghamiry, H. S., Gholami, A., Operto, S. & Avanaki, K. (2022). 2D-FC-ADMM reconstruction algorithm for quantitative optoacoustic tomography in a highly scattering medium: a simulation study. In *SPIE Photonics West, San Francisco*. (PDF)
9. Aghamiry, H. S., Gholami, A., & Operto, S. (2021). Wavefield Inversion with Adaptive Regularization. In *82nd EAGE Annual Conference & Exhibition* (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Amsterdam. (PDF)
10. Aghamiry, H. S., Gholami, A., & Operto, S. (2021). On the Robustness of Sparsity-Promoting Regularized Wavefield Inversion with Phase Retrieval Against Sparse Long-Offset Acquisitions. In *82nd EAGE Annual Conference & Exhibition* (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Amsterdam. (PDF)
11. Aghamiry, H. S., Gholami, A., & Operto, S. (2021). Computationally-efficient frequency-domain wavefield reconstruction inversion with direct solver. In *82nd EAGE Annual Conference & Exhibition* (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Amsterdam. (PDF)
12. Aghamiry, H. S., Gholami, A., & Operto, S. (2021). Proximal-Newton methods to solve non-linear problems with non-smooth regularizations. In *82nd EAGE Annual Conference & Exhibition* (Vol. 2021, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Amsterdam. (PDF)
13. Gholami, A., Aghamiry, H. S., & Operto, S. (2021). Data Reconstruction Inversion: an augmented Lagrangian based full-waveform inversion in the time domain. In *82nd EAGE Annual Conference & Exhibition*. European Association of Geoscientists & Engineers, Amsterdam. (PDF)
14. Aghazade, K., Gholami, A., Aghamiry, H. S., & Operto, S. (2021). Augmented Lagrangian based full-waveform inversion with Anderson acceleration. In *82nd EAGE Annual Conference & Exhibition*. European Association of Geoscientists & Engineers, Amsterdam. (PDF)
15. Rezaei A., Aghamiry, H. S., Gholami, A., & Operto, S. (2021). Iterative reconstruction of data assimilated wavefields in the extended-source full-waveform inversion. In *82nd EAGE Annual Conference & Exhibition*. European Association of Geoscientists & Engineers, Amsterdam. (PDF)

16. Gholami, A., **Aghamiry, H. S.**, & Operto, S. (2021). A data reconstruction inversion approach to extended FWI. In *SEG Technical Program Expanded Abstracts 2021*. Society of Exploration Geophysicists, Denver-Online. ([PDF](#))
17. Gholami, A., **Aghamiry, H. S.**, & Operto, S. (2021). Clarifying some issues on Extended FWI: scattered-field equation, time reversal, and source reconstruction. In *SEG Technical Program Expanded Abstracts 2021*. Society of Exploration Geophysicists, Denver-Online. ([PDF](#))
18. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2021). Dual variable compression: remedy the memory issue of full-space approaches for full-waveform inversion. In *SEG Technical Program Expanded Abstracts 2021*. Society of Exploration Geophysicists, Denver-Online. ([PDF](#))
19. **Aghamiry, H. S.**, Mamfoumbi, F., Gholami, A., & Operto, S. (2021). ADMM-based full-waveform inversion with unknown source signatures. In *SEG Technical Program Expanded Abstracts 2021* Society of Exploration Geophysicists, Denver-Online. ([PDF](#))
20. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2020). Simultaneous wavespeed and attenuation reconstruction by complex-valued optimization with adaptive BM3D regularization. In *SEG Technical Program Expanded Abstracts 2020*. Society of Exploration Geophysicists, Houston-Online. ([PDF](#))
21. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2020). Wavefield inversion for microseismic imaging. In *SEG Technical Program Expanded Abstracts 2020*. Society of Exploration Geophysicists, Houston-Online. ([PDF](#))
22. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). On the robustness of l1-regularized ADMM-based wavefield reconstruction inversion against compressed acquisition sampling. In *SEG Technical Program Expanded Abstracts 2019* (pp. 1385-1389). Society of Exploration Geophysicists, San Antonio. ([PDF](#))
23. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Robust ADMM-based wavefield reconstruction inversion with phase retrieval. In *SEG Technical Program Expanded Abstracts 2019* (pp. 1526-1530). Society of Exploration Geophysicists, San Antonio. ([PDF](#))
24. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Wavefield reconstruction inversion with enhanced hybrid Tikhonov and TV regularization for imaging piece-wise smooth media. In *81st EAGE Conference and Exhibition 2019* (Vol. 2019, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, London. ([PDF](#))
25. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Multi-parameter ADMM-based wavefield reconstruction inversion in VTI acoustic media. In *81st EAGE Conference and Exhibition 2019* (Vol. 2019, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, London. ([PDF](#))
26. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Compound Regularization of Full-waveform Inversion for Imaging Piecewise Media. In Workshop on Machine-Learning-Assisted Image Formation, Nice (France). ([PDF](#))
27. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2018). Hybrid Tikhonov+ total-variation regularization for imaging large-contrast media by full-waveform inversion. In *SEG Technical Program Expanded Abstracts 2018* (pp. 1253-1257). Society of Exploration Geophysicists, Anaheim. ([PDF](#))
28. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2018). Imaging contrasted media with total variation constrained full-waveform inversion and split Bregman iterations. In *80th EAGE Conference and Exhibition 2018* (Vol. 2018, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Copenhagen. ([PDF](#))
29. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2018). Improving full-waveform inversion based on wavefield reconstruction via Bregman iterations. In *80th EAGE Conference and Exhibition 2018* (Vol. 2018, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Copenhagen. ([PDF](#))
30. **Aghamiry, H. S.**, & Gholami, A. (2017). A dictionary learning approach for interval Q estimation and compensation. In *79th EAGE Conference and Exhibition 2017* (Vol. 2017, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Paris. ([PDF](#))
31. Gholami, A., & **Aghamiry, H. S.** (2017). RR algorithm for robust inversion of seismic data. In *79th EAGE Conference and Exhibition 2017* (Vol. 2017, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Paris. ([PDF](#))

Invited talks

1. **Aghamiry, H. S.** (2022). Localized Wavefield Inversion (LWI): an Adaptation of Multi-Block ADMM for Localized FWI, ICMS@Strathclyde: Solvers for frequency-domain wave problems and applications workshop, Glasgow. ([PDF](#))
2. **Aghamiry, H. S.** (2021). Extended Full Waveform Inversion with the augmented Lagrangian method. 17th International Congress of the Brazilian Geophysical Society (CISBGf), Rio de Janeiro-Online.
3. **Aghamiry, H. S.** (2021). Extended Full Waveform Inversion with the augmented Lagrangian method. SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS21), Milan-Online.
4. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2020). Robust Full Waveform Inversion for sparse ultra-long offset OBN data. In *EAGE Seabed Seismic Today: from Acquisition to Application*, (Vol. 2020, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, Abu Dhabi-Online. ([PDF](#))
5. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Implementing bound constraints and hybrid total-variation+Tikhonov regularization in wavefield reconstruction inversion with the alternating direction method of multiplier. SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS19), Houston.
6. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Extending the search space of full waveform inversion (FWI) by alternating direction method of multipliers (ADMM). SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS19), Houston.
7. **Aghamiry, H. S.**, Gholami, A., & Operto, S. (2019). Joint estimation of velocity and attenuation by frequency-domain TV-regularized wavefield reconstruction inversion. In *81st EAGE Conference and Exhibition 2019 Workshop Programme* (Vol. 2019, No. 1, pp. 1-5). European Association of Geoscientists & Engineers, London. ([PDF](#))

Teaching activity

- Teacher assistant for "Optimization theory" and "Signal processing"** 2015 - 2017
University of Tehran, Tehran, Iran.
- Instructor for fundamental Physics and Mathematics** 2010 - 2014
Department of Engineering, Azad University, Dezful, Iran

Direction of M.Sc. and Ph.D. theses

- M.Sc. thesis in Geophysics** 2019 - 2021
University of Tehran, Institute of Geophysics, Tehran, Iran.
Using preconditioners for iterative reconstruction of data assimilated wavefield in the frequency domain, Arash Rezaei (main supervisor: A. Gholami)
- M.Sc. thesis in Geophysics** 2019 - 2021
University of Tehran, Institute of Geophysics, Tehran, Iran.
Evaluation of anderson acceleration with krylov subspace methods for seismic inveraion, Mahdi Sonbolestan (main supervisor: A. Gholami)
- M.Sc. thesis in Geophysics** 2021 - 2022
University of Tehran, Institute of Geophysics, Tehran, Iran.
Extended Full-Waveform Inversion for Imaging Viscoacoustic Media: Application in Medical Imaging, Yousef Riazifar (main supervisor: A. Gholami)
- M.Sc. thesis in Geophysics** 2021 - 2022
University of Tehran, Institute of Geophysics, Tehran, Iran.
Extending IR-WRI Capabilities in Seismic Full Waveform Inversion to Ground Penetrating Radar Full Waveform Inversion, Ali Jalali (main supervisor: A. Gholami)
- Ph.D. thesis in Sciences of the Earth and Universe** 2019 - Ongoing
Université Côte d'Azur, Geoazur, Valbonne, France.
3D seismic imaging of the Earth crust by full waveform inversion, Frichnel-Wilma Mamfoumbi-Ozoumet (main supervisor: S. Operto)
- Ph.D. thesis in Geophysics (Seismology)** 2020 - Ongoing
University of Tehran, Institute of Geophysics, Tehran, Iran.
Multiparameter Elastic Full Waveform Inversion using Extended Formulations and Augmented Lagrangian, Kamal Aghazade (main supervisors: A. Gholami, S. Operto)

Miscellanea

- Member of** European Association of Geoscientists and Engineers (EAGE), Society of Exploration Geophysicists (SEG), Institute of Electrical and Electronics Engineers (IEEE), Society for Industrial and Applied Mathematics (SIAM).
- Reviewer for journals:** "Geophysics", "Geophysical Journal International", "Geophysical Prospecting", "Applied Geophysics", "IEEE transaction on Geoscience and remote sensing", "IEEE transaction on signal processing", "Journal of Geophysics and Engineering", "Computational Geosciences", "IEEE transaction on Geoscience and remote sensing letters".