Curriculum Vitae – Vladimir V. Kazei

Personal Information

Vladimir V. Kazei
Date of birth:
February 18th, 1988
Address:
Bldg 1, 3203-CU10, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi-Arabia
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I was born in Saint Petersburg, Russia. I have lived and studied there most of my life. Studying at school, I liked math and first participated in a Mathematical olympiad when I was ten. Solving tricky problems was fun for me, as well as discussing them with classmates and tutors. I enjoyed participation in mathematical competitions, getting several diplomas at high school and university for achievements.

While studying at university I realized that new aspects of Mathematical Physics, which was my major, are taking me too far away from reality and switched to geophysics. Geophysics is great because it allows to apply mathematical skills to real-world applications.

Research interests

Geophysics; seismic data processing techniques, full waveform inversion; seismic modeling and inverse problems; regularization methods; inversion for low spatial wavenumbers in a model; seismic inversion of multiples and surface waves.

Education

PhD in geophysics, Saint Petersburg State University / The Schmidt Institute of Physics of the Earth of the Russian Academy of Sciences (IPE RAS) (2012-2016). Thesis advisor: Boris M. Kashtan (SPSU, Faculty of Physics, Earth's Physics Department). Thesis title: *Pseudo-spectral full-waveform inversion in acoustic media.*

Master of Sciences in physics with distinction from Saint Petersburg State University (2009-2012). Thesis advisor: Boris M. Kashtan (SPSU, Faculty of Physics, Earth's Physics Department). Thesis title: *Investigation of possibility to use head waves for inhomogeneity reconstruction in acoustic media.*

Bachelor of Sciences in physics with distinction from Saint Petersburg State University (2005-2009). Thesis advisor: Nikolay D. Filonov (SPSU, Faculty of Physics, Department of Mathematical Physics). Thesis title: *Investigation of zero set of the Fourier transform of a 2d characteristic function.*

Saint Petersburg Lyceum 533 (2003-2005) High school. Mathematical class.

Academic Gymnasium of Saint Petersburg State University (2001-2003)
High school. Mathematical class.

EXPERIENCE

2016 → Post Doctorate Researcher
at King Abdullah University of Science and Technology,
Seismic Wave Analysis Group (SWAG),
Physical Sciences and Engineering Department (PSE)

2010 → **2016** Engineer-researcher (geophysicist) at Saint Petersburg State University,
Faculty of Physics, Earth's Physics Department,
Laboratory of Elastic Media Dynamics

Mathematical derivations and scientific programming for geophysical problems. Seismic data modelling and processing. Involved into a project: "Full-waveform inversion" sponsored by Shell Global Solutions International B.V. since 2011.

2013 → Visiting-researcher (geophysicist) at University of Hamburg,
Institute of Geophysics, Chair of Applied Seismics
Development of "Pseudo-spectral seismic waveform inversion" codes.

2014, October Visiting-researcher (geophysicist) at Colorado School of Mines,
Department of Geophysics, Center for Wave Phenomena
Short stay to collaborate with Prof. Paul Sava on development of extended images applications to full-waveform inversion.

2015, March-April Visiting-researcher (geophysicist) at KAUST,
Department of Earth Science and Engineering, Seismic Wave Analysis Group (SWAG)

COMPUTER SKILLS

Linux (Debian, CentOS), Microsoft Windows and Office, bash and tcsh, LaTeX 2_ε, Matlab, C, Madagascar.

PROFESSIONAL AFFILIATION

Society of Exploration Geophysicists (SEG), European Association of Geoscientists and Engineers (EAGE), Society of Petroleum Engineers (SPE).

LANGUAGE SKILLS

Russian: Mother tongue; **English**: Fluent; **German**: Basic.

Publications

Kazei, V. and Alkhalifah, T., 2017: Waveform inversion for orthorhombic anisotropy with P-waves: feasibility & resolution, GJI, submitted.

Ovcharenko, O.; Kazei, V.; Peter, D.; Alkhalifah, T., 2017: Variance-based salt body reconstruction for improved full-waveform inversion, Geophysics, submitted.

V.V. Kazei, B.M. Kashtan, V.N. Troyan and E. Tessmer, Pseudo-spectral full-waveform inversion, Seismic Technology, 2015 (2), pages 18-28.

D.V. Anikiev, V.V. Kazei, B.M. Kashtan, A.V. Ponomarenko, V.N. Troyan, R.A. Shigapov, Methods of seismic waveform inversion, Seismic Technology, 2014, 12(1), pages: 38-58.

V.V. Kazei, B.M. Kashtan, V.N. Troyan and W.A. Mulder, On the role of reflections, refractions and diving waves in full waveform inversion // Geophysical Prospecting, 2013, 61(6), pages: 1252-1263, doi:10.1111 1365-2478.12064.

Conference proceedings

Vladimir Kazei and Tariq Alkhalifah (2017) Regularized Centered Differential Waveform Inversion, to be presented at the AGU annual meeting in New Orleans, USA

Oleg Ovcharenko, Vladimir Kazei, Daniel Peter and Tariq Alkhalifah (2017), Super-resolution time-lapse seismic waveform inversion, to be presented at the AGU annual meeting in New Orleans, USA

Kazei, V. and Alkhalifah, T. (2017a). Centered differential waveform inversion with minimum support regularization. In 79th EAGE Conference and Exhibition 2017.

Kazei, V. and Alkhalifah, T. (2017b). On the resolution of inversion for orthorhombic anisotropy. In 79th EAGE Conference and Exhibition 2017.

Kazei, V., Kalita, M., and Alkhalifah, T. (2017). Salt-body inversion with minimum gradient support and sobolev space norm regular- izations. In 79th EAGE Conference and Exhibition 2017.

Ovcharenko, O., Kazei, V., Peter, D., and Alkhalifah, T. (2017). Variance-based salt body reconstruction. In 79th EAGE Confer- ence and Exhibition 2017.

Vladimir Kazei, Ekkehart Tessmer, and Tariq Alkhalifah (2016) Scattering angle-based filtering via extension in velocity. SEG Technical Program Expanded Abstracts 2016: pp. 1157-1162. doi: 10.1190/segam2016-13870908.1

Kazei V. V., Tessmer E., Alkhalifah T. Efficient Deflection Angle Based Filtering for Waveform Inversion //7th EAGE Saint Petersburg International Conference and Exhibition. 2016.

V.V. Kazei, B.M. Kashtan, V.N. Troyan and W.A. Mulder, FWI spectral sensitivity analysis in the presence of a free surface // SEG International Exposition and 85th Annual Meeting in New Orleans 2015, Louisiana

V.V. Kazei, B.M. Kashtan, V.N. Troyan and W.A. Mulder, Free-surface Multiples and full-waveform inversion spectral resolution // 77th EAGE Conference and Exhibition 2015, oral presentation

V.V. Kazei, E. Tessmer, FWI without low frequencies, non-stationary gradient filtering approach // International workshop on Multi-scale Waveform Modeling and Inversion, March, 2015, KAUST, Saudi-Arabia, oral presentation

V.V. Kazei, B.M. Kashtan, V.N. Troyan and W.A. Mulder, FWI sensitivity analysis in the presence of free-surface multiples// 2013 SEG Workshop, Muscat, Oman, Full Waveform Inversion: From Near Surface to Deep, oral presentation.

V.V. Kazei, B.M. Kashtan, V.N. Troyan and W.A. Mulder, Spectral sensitivity analysis of FWI in a constant-gradient background velocity model// EAGE Conference London 2013 Expanded Abstracts presented as poster Tu-P04-11.

V.V. Kazei, A.V. Ponomarenko, B.M. Kashtan, V.N. Troyan and W.A.Mulder, On the contribution of head waves to full waveform inversion// EAGE Conference Copenhagen 2012 Expanded Abstracts presented as poster P341.

V.V. Kazei Head waves and diving waves from a transition zone// International Student Conference Science and Progress. StPb.:SOLO, 2012.

V.V. Kazei, Regularization methods in ray tomography// International Student Conference Science and Progress Proceedings. StPb.:SOLO, 2010, P.39.

References

Prof. Dr. Tariq Alkalifah (supervisor at KAUST),
Physical Sciences and Engineering Division, 4700 King Abdullah University of Science and Technology Office 3308 building 1, Thuwal 23955-6900, Saudi Arabia,
Email: tariq.alkhalifah@kaust.edu.sa Tel: +966 (0)2 8080282 Mob: +966-54 4700039

Prof. Dr. Boris Kashtan (scientific advisor for PhD) Earth's physics Department,
Faculty of physics, Saint-Petersburg State University.
Email : b.kashtan@spbu.ru.; Tel : +7 812 428 4317

Prof. Dr. Wim Mulder (supervisor) Shell Global Solutions International BV & Delft University of Technology,
E-mail : Wim.Mulder@shell.com; Tel : +3 170 447 2905

Prof. Dr. Vladimir Troyan (MSc thesis reviewer) Earth's physics Department,
Faculty of physics, Saint-Petersburg State University.
E-mail : vtroyan@hq.pu.ru; Tel : +7 921 900 0581

Prof. Dr. Dirk Gajewsky (supervisor of internships at University of Hamburg),
Chair of Applied Seismics, Institute of Geophysics, University of Hamburg.
E-mail : dirk.gajewski@zmaw.de; Tel: +49 40 42838 2975

Dr. Ekkehart Tessmer (collaboration on pseudo-spectral methods),
Chair of Applied Seismics, Institute of Geophysics, University of Hamburg.
E-mail : ekkehart.tessmer@zmaw.de; Tel: +49 40 42838 5050

Prof. Dr. Paul Sava (collaboration on extended imaging for FWI),
Center for Wave Phenomena, Department of Geophysics, Colorado School of Mines
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