Mauricio D Sacchi
Professor
Department of Physics, University of Alberta

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Contents

1 Short biography

Mauricio D. Sacchi obtained a Diploma in Geophysics from The National University of La Plata, Argentina, in 1988 and a Ph.D., also in Geophysics, from UBC, Canada, in 1996. He joined the Department of Physics at the University of Alberta in 1997. His research interests include seismology, geophysical signal analysis, inverse problems and seismic imaging methods. M D Sacchi directs the Signal Analysis and Imaging Group, an initiative for advanced geophysical signal processing and imaging research. M D Sacchi is the recipient of the 2012 Medal of the Canadian Society of Exploration Geophysicists (CSEG), was 2014 Central and South America Honorary Lecturer for the Society of Exploration Geophysicists, and the 2016 CSEG Distinguished lecturer. Also recipient of 2019 Virgil Kauffman Gold Medal. He was the Editor-in-chief of the journal Geophysics from 2016-2018. M D Sacchi was Chair of the Department of Physics at the University of Alberta for two terms (2010-2015 and 2016-2021).

2 Personal data

Full name:	Mauricio Dino Sacchi
Birth place and date:	Coronel Brandsen, Province of Buenos Aires, Argentina, March 3, 1965
Citizenship:	Argentine, Canadian and Italian
Marital status:	Married, 2 Children
Languages:	Spanish, Italian and English

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3   Education

09/1988	Diploma (Geophysics), Universidad Nacional de La Plata (UNLP), La Plata, Argentina.
01/1996	PhD Geophysics, Department of Geophysics and Astronomy, University of British Columbia (UBC), Vancouver, Canada.

4   Positions

07/2016- 06/2021	Chair, Department of Physics, University of Alberta
07/2015-06/2016	Administrative leave, Professor, Department of Physics, University of Alberta
07/2010-06/2015	Chair, Department of Physics, University of Alberta
07/2009-06/2010	Associate Chair for Research, Department of Physics, University of Alberta
07/2007-	Full Professor
07/2003-08/2004	Sabbatical Leave at TU-Delft
07/2001-06/2006	Associate Professor (*tenured*), Department of Physics, University of Alberta
07/1997-06/2001	Assistant Professor, Department of Physics, University of Alberta
02/1996-06/1997	Post-Doctoral Fellow, Earth and Ocean Sciences, UBC
09/1992-01/1996	Research Assistant, Geophysics and Astronomy, UBC
09/1992-01/1996	PhD Student, Geophysics and Astronomy, UBC
04/1990-08/1992	Instructor, Department of Seismology, UNLP, Argentina
03/1989-04/1992	Instructor, Department of Meteorology, UNLP, Argentina
03/1989-08/1992	Research Fellow, CONICET, Argentina

5   Recognitions

- 2019 SEG Virgil Kauffman Gold Medal. From SEG honours and awards committee: "The Kauffman Gold Medal is awarded to a person who, in the unanimous opinion of the Honors and Awards Committee and the Board of Directors, has made an outstanding contribution to the advancement of the science of geophysical exploration as manifested during the previous five years. The contribution may be of a technical or a professional nature." Past awardees of

the Kauffman Gold Medal include Cecil H. Green, Lucien J. B. LaCoste, David W. Strangway and Oz Yilmaz. The citation was written by Dr. Sven Treitel and can be found here: [Link]

- 2018 Outstanding Achievement in Science & Engineering, ASTech Foundation, Finalist [Link]

- 2018 CSEG Symposium in honour of M D Sacchi. I was the honouree for the annual one day symposium of CSEG. Excerpt from the announcement of the symposium: "While firmly rooted in the academic sphere, he has been very effective at bringing his research achievements to bear on several of our key applied geophysics challenges. Under his stewardship for the past 20 years, the U of A SAIG Consortium has made valuable contributions to our industry through its active and relevant research program, both in terms of advanced processing algorithms and topnotch students who have entered our workforce." [Link]

- 2016-2018 Editor-in-Chief, Geophysics, SEG Link

- 2016 CSEG Distinguished Speaker. National lecture tour presented by a distinguished member of the Canadian Society of Exploration Geophysicists (CSEG). The goal is to promote the science and application of geophysics to those working with, studying, and interested in the science of geophysics and highlights a topic of current interest [Link]

- 2014 SEG Honorary Lecturer for Central and South America. Recognizes contributions to the science or application of applied geophysics. The lecture tour is an active effort to promote geophysics and provide a connection to SEG (Society of Exploration Geophysicists) activities and practices worldwide. I was selected to tour South America and Central America During the tour I delivered 18 talks at universities and professional associations in South and Central America [Link]

- 2012 Roy O. Lindseth CSEG Medal Medal. The CSEG Medal was introduced in 1988 and is the highest award that the Society bestows. The CSEG Medal is given in recognition of the contribution to Exploration Geophysics by a member of the profession in Canada [Link]

- 2007 CSEG Meritorious Service Awards. The Meritorious Service Award is given to members of the CSEG who have made a prominent and/or lengthy contribution to the Society and/or the industry as a whole [Link]

- 2001 Schlumberger Foundation Award. The award also consisted of a 45,000$ grant to carry out research in seismic imaging.

- University Graduate Fellowship, UBC, 1993-1996.

6 Publications

h-index: **55**
Total number of citations: 12792
Data from Google Citations retrieved on May 2023: `http://goo.gl/PYqDYd`

6.1 Books

T J Ulrych and M D Sacchi, Information-based Inversion and Processing with Applications. Hardbound, ISBN: 0-08-044721-X, 404 pages, 2005, Elsevier.

M D Sacchi, Statistical and Transform Methods for Geophysical Signal Processing. *Textbook I developed for GEOPH 426 - Signal Processing in Geophysics, 193 pages.* Last updated: Winter 2023
https://sites.ualberta.ca/~msacchi/TEXTBOOK_G426_SACCHI.pdf

M D Sacchi, Introduction to Seismic Imaging. *Textbook I developed for GEOPH 326 - Seismic Imaging, 130 pages.* Last updated: Winter 2019
https://sites.ualberta.ca/~msacchi/TEXTBOOK_G326_SACCHI.pdf

6.2   Articles

1. R Manenti and M D Sacchi, 2023, Tensor Tree decomposition as a rank-reduction method for pre-stack interpolation: Geophysical Prospecting, accepted.

2. K Torres Bautista and M D Sacchi, 2023, Deep decomposition learning for reflectivity inversion: Geophysical Prospecting, accepted.

3. Yi Guo, Rongzhi Lin and M D Sacchi, 2023, Optimal Seismic Sensor Placement Based on Reinforcement Learning Approach: An Example of OBN Acquisition Design: IEEE Transactions on Geoscience and Remote Sensing, 61, 1-12.

4. W Sun, M D Sacchi and YJ Gu, 2023, Multichannel Sparse Deconvolution of Teleseismic Receiver Functions with FX Preconditioning: Journal of Geophysical Research: Solid Earth, e2022JB025625 (https://doi.org/10.1029/2022JB025625)

5. F Li, J Gao, M D Sacchi, H Lu, Y Wang, H Chen and C Li, 2023, Multicomponent seismic data reconstruction via a quaternion-based vector POCS method: IEEE Transactions on Geoscience and Remote Sensing, 61, 1-16

6. Hanh Bui, M van der Baan and M D Sacchi, 2023, Comparison of sparse Gabor-based methods for detection of microseismic events: Geophysics, 88(2), 1-38

7. Y Bezerra, G Garabito, M D Sacchi and J Caldeira, 2023, Data reconstruction combining MWNI and CRS-based interpolation methods: Journal of Applied Geophysics, 89, 104912

8. Dawei Liu, W Wang, X Wang, Z Shi, M D Sacchi and W Chen, 2022, Improving sparse representation with deep learning: a workflow for separating strong background interference: Geophysics 88 (1), 1-86

9. Hongling Chen, M D Sacchi, H Haghshenas Lari, J Gao and X Jiang, 2023, Nonstationary seismic reflectivity inversion based on prior-engaged semisupervised deep learning method: Geophysics 88 (1), WA115-WA128

10. R Lin, Y Guo, F Carozzi and M D Sacchi, 2022, Simultaneous deblending and source reconstruction for compressive 3D simultaneous-source acquisition data via Interpolated-MSSA (I-MSSA): Geophysics 87 (6), V559-V570

11. K Torres Bautista and M D Sacchi, 2022, Least-squares reverse time migration via deep learning-based updating operators: Geophysics 87 (6), S315-S333

12. D Brox and M D Sacchi, 2022, Robust Vector MSSA for SNR Enhancement of seismic records: IEEE Transactions on Geoscience and Remote Sensing, 60, pp. 1-6.

13. Dawei Liu, X Wang, X Yang, H Mao, M D Sacchi and W Chen, 2022, Accelerating seismic scattered noise attenuation in OVT domain: application of deep learning: Geophysics 87 (5), V505-V519

14. Dawei Liu, M D. Sacchi and W Chen, 2022, Efficient Tensor Completion Methods for 5-D Seismic Data Reconstruction: Low-Rank Tensor Train and Tensor Ring: IEEE Transactions on Geoscience and Remote Sensing, vol. 60, pp. 1-17.

15. A Anagaw and M D Sacchi, 2022, Regularization by Denoising (RED) with adaptive-weighted Total Variation for FWI mode updates in large-contrast media: Geophysical Journal International, 229 (2), 814-827.

16. R Lin, B Bahia and M D Sacchi, 2022, Iterative deblending of Simultaneous-source seismic data via a robust Singular Spectrum Analysis filter: IEEE Transactions of Geoscience and Remote sensing, 60, 1-10.

17. Y Bezerra, G Garabito and M D Sacchi, 2021, A comparative study of multidimensional Fourier reconstruction of 2D prestack seismic data: Journal of Applied Geophysics, 194, 104445.

18. B Bahia, R Lin and M D Sacchi, 2021, Regularization by denoising for simultaneous source separation: Geophysics 86(6), P69-P83.

19. TNHT Tran, F He, Z Zhang, MD Sacchi, D Ta and LH Le, 2021, Single Versus Multi-channel Dispersion Analysis of Ultrasonic Guided Waves Propagating in Long Bones: Ultrasonic Imaging 43(3), 157-163.

20. Y Chen, YJ Gu, F Mohammed, J Wang, M D Sacchi, R Wang and B Nguyen, 2021, Crustal attenuation beneath western North America: Implications for slab subduction, terrane accretion and arc magmatism of the Cascades: Earth and Planetary Science Letters 560, 116783

21. Li Ji and M D Sacchi, 2021, A lp-space Matching Pursuit algorithm and its application to robust seismic data denoising via time-domain: Geophysics 86 (3), 1-90

22. N Kazemi and M D Sacchi, 2021, Offset-extended sparse Radon transform: application to multiple suppression in the presence of AVO: Geophysics, Geophysics 86 (3), 1-41.

23. F Carozzi and M D Sacchi, 2021, Interpolated Multichannel Singular Spectrum Analysis (I-MSSA): a reconstruction method that honors true trace coordinates, Geophysics 86 (1), V55-V70

24. G. Rubio, Y Chen, M D Sacchi and Y Gu, 2021, 3D and 5D reconstruction of P receiver functions via multi-channel singular spectrum analysis, Geophysical Journal International: Geophysical Journal International, 225(2), 1110-1128.

25. F Oghenekohwo and M D Sacchi, 2021, Transform-domain noise synthesis and NMO-Stack deconvolution approach to ground roll attenuation, Geophysics 86 (1), V15-V22

26. K Chen, M D Sacchi, 2020, Time-domain elastic Gauss–Newton full-waveform inversion: a matrix-free approach, Geophysical Journal International 223 (2), 1007-1039

27. Wenlei Gao, G. Matharu and M D Sacchi, 2020, Fast least-squares reverse-time migration via a superposition of Kronecker products, Geophysics 85 (2), S115–S134

28. Breno Bahia and M D Sacchi, 2019, Widely-linear denoising of multicomponent seismic data, Geophysical Prospecting, 68 (2), 431-445

29. Rongzhi Lin and M D Sacchi, 2020, Separation of simultaneous sources acquired with high blending fold data via coherence pass robust Radon operators, Geophysics 85 (3), V269-V282

30. Wenlei Gao and M D Sacchi, 2020, Random noise attenuation via the randomized canonical polyadic (CP) decomposition: Geophysical Prospecting, 68 (3), 872-891.

31. Minjun Park and M D Sacchi, 2020, Automatic velocity analysis using Convolutional Neural Network and Transfer learning: Geophysics, 85 (1), V33-V43.

32. Breno Bahia and M D Sacchi, 2019, Quaternionic rank-reduction methods for vector-field seismic data processing: Digital Signal Processing, 87, 178-189.

33. Cheng Jinkun, Gao J and M D Sacchi, 2019, Computational efficient multi-dimensional Singular Spectrum Analysis for prestack seismic data reconstruction: Geophysics, 84 (2), 1-36

34. H Haghshenas Lari, M Naghizadeh, M D Sacchi, A Gholami, 2019, Adaptive Singular Spectrum Analysis for Seismic De-noising and Interpolation, Geophysics 84 (2), 1-35.

35. Carozzi F and M D Sacchi, 2019, Robust tensor-completion algorithm for 5D seismic-data reconstruction: Geophysics, Geophysics 84 (2), 1-49.

36. Matharu G and M D Sacchi, 2019, A subsampled truncated-Newton method for multi-parameter full waveform inversion: Geophysics 84 (3), 1-33.

37. Chen Ke, and M D Sacchi, 2018, The importance of including density in elastic least-squares reverse time migration: multi-parameter crosstalk and convergence, Geophysical Journal International 216 (1), 61-80.

38. Ibrahim A, P Terenghi and M D Sacchi, 2018, Simultaneous reconstruction of seismic reflections and diffractions using a global hyperbolic Radon dictionary: Geophysics, 86 (3) V315-V323.

39. Mostafa Naghizadeh, M D Sacchi, 2018, Ground-roll attenuation using Curvelet downscaling: Geophysics, 83 (3), V185-V195.

40. Matharu G and M D Sacchi, 2018, Source encoding in multi-parameter full waveform inversion: Geophysical Journal International, 214 (2), 792-810.

41. Tho NHT Tran, Lawrence H Le, M D Sacchi, Vu-Hieu Nguyen, 2018, Sensitivity analysis of ultrasonic guided waves propagating in tri-layered bone models: a numerical study: Biomechanics and modeling in mechanobiology 17 (5), 1269?1279.

42. Anagaw A, and M D Sacchi, 2018, Model parametrization strategies for Newton-based acoustic Full Waveform Inversion: Journal of Applied Geophysics, Volume 157, p. 23-36.

43. Mengyao Sun, M D Sacchi and J. Zhang, 2018, An efficient tomographic inversion method based on the stochastic approximation: Geophysics, 83 (4), R283-R296.

44. A Anagaw and M D Sacchi, 2018, Edge-preserving smoothing for simultaneous-source FWI model updates in high-contrast velocity models: Geophysics, 83 (2), 1-18.

45. Ramin M H Dokht, Y Gu, M D Sacchi, 2018, Migration Imaging of the Java Subduction Zones: Journal of Geophysical Research: Solid Earth, 123 (2), 1540-1558.

46. W Gao and M D Sacchi, 2018, Multicomponent seismic data registration by no-linear optimization: Geophysics 83 (1), V1-V10

47. Linan Xu and M D Sacchi, 2018, Preconditioned acoustic least-squares two-way wave equation migration with exact adjoint operator: Geophysics 83 (1), S1-S13

48. Ismael Vera Rodriguez and M D Sacchi, 2017, Seismic Source Monitoring with Compressive Sensing, *in* Compressive Sensing of Earth Observations, 2017 - CRC Press.

49. S Martins, J M Travassos and M D Sacchi, 2017, Interpolating GPR data using anti-alias singular spectrum analysis (SSA): Near Surface Geophysics, 15 (5), 447-455.

50. Vu-Hieu Nguyen, Tho N.H.T. Tran, M D Sacchi, Salah Naili, and Lawrence H Le, 2017, Computing dispersion curves of elastic/viscoelastic transversely-isotropic bone plates coupled with soft tissue and marrow using semi-analytical finite element (SAFE) method. Venue: Computers in Biology and Medicine, 87, 371-381.

51. A Stanton and M D Sacchi, 2017, Elastic least-squares wave equation migration: Geophysics, 82 (4), 1-58

52. K Chen and M D Sacchi, 2017, Elastic least-squares reverse time migration via linearized elastic full waveform inversion with pseudo-Hessian preconditioning: Geophysics 82 (5), S341-S358.

53. A Gholami and M D Sacchi, 2017, Time-Invariant Radon Transform by Generalized Fourier Slice Theorem: Inverse Problems and Imaging, 11 (3), 501-519.

54. H Wang, M D Sacchi and J Ma, 2017, Linearized dynamic warping with l1-norm constraint for multicomponent registration: Journal of Applied Geophysics, 139, 170-176.

55. R M H Dokht, Yu J Gu and M D Sacchi, 2017, Singular spectrum analysis and its applications in mapping mantle seismic structure: Geophysical Journal International, 208 (3), 1430-1442.

56. D Perez, D R Velis and M D Sacchi, 2017, Three-term inversion of prestack seismic data using weighted l2-1 mixed norm: Geophysical Prospecting, 65, 1477-1495

57. R M H Dokht, Y J Gu, and M D Sacchi, 2016, Waveform inversions of SS precursors: An implication of the northwestern Pacific subduction zones and intraplate volcanoes in China: Gondwana Research, 40, 77-90.

58. Jianjun Gao, Jinkun Chen and M D Sacchi, 2017, 5D seismic reconstruction using parallel square-matrix factorization: IEEE Transactions on Geoscience and Remote Sensing: IEEE Transactions of Geoscience and Remote Sensing, 55(4), 2124-2135.

59. J I Sabbione and M D Sacchi, 2016, Restricted model domain time Radon transforms: Geophysics, 81, 6, 1ND-5ND.

60. Ke Chen and M D Sacchi, 2016, Robust f-x projection filtering for simultaneous random and erratic seismic noise attenuation: Geophysical Prospecting, 65, 650?668.

61. N Kazemi, E Bongajum, and M D Sacchi, 2016, Surface-Consistent Sparse Multichannel Blind Deconvolution of Seismic Signals: IEEE Transactions on Geoscience and Remote Sensing, 54(6), 3200 - 3207.

62. G Li, M D Sacchi, H Zheng, 2016, In situ evidence for frequency dependence of near-surface Q: Geophysical Journal International 204 (2), 1308-1315.

63. A Ibrahim and M D Sacchi, 2015, Fast simultaneous seismic source separation using Stolt migration and demigration operators: Geophysics, 80(6),WD27-WD36.

64. J Cheng and M D Sacchi, 2016, Fast dual domain reduced rank algorithm for 3D deblending via randomized QR decomposition: Geophysics, 81(1), V89-V101.

65. Shiwei Yu, Jianwei Ma, Xiaoqun Zhang and M D Sacchi, 2015, Interpolation and denoising of high-dimensional seismic data by learning a tight frame: Geophysics, 80(5), V119-V132.

66. N Kazemi and M D Sacchi, 2015, Block row recursive least-squares migration: Geophysics, 80(5), A95-A101.

67. Jianjun Gao, A Stanton and M D Sacchi, 2015, The Parallel Matrix Factorization (PMF) algorithm and its application to 5D seismic reconstruction and denoising: Geophysics, 80(6), V173-V187.

68. DR Velis, J Sabbione and M D Sacchi, 2015, Fast and automatic microseismic phase-arrival detection and denoising by pattern recognition and reduced-rank filtering: Geophysics, 80 (6), WC25-WC38.

69. YJ Gu , Y Zhang Y, M D Sacchi, Y Chen and S Contenti S, 2015, Sharp mantle transition from cratons to Cordillera in southwestern Canada: Journal of Geophysical Research (Solid Earth), 120 (7), 5051-5069.

70. Guofa Li , M D Sacchi and Y Wang, 2015, Characterization of interbedded thin beds using zero-crossing time stratal amplitude slices: Geophysics, 80 (5), N23-N35.

71. Jinkun Cheng and M D Sacchi, 2015, Separation and reconstruction of simultaneous source data via iterative rank reduction: Geophysics, 80 (4), V57-V66.

72. J I Sabbione, M D Sacchi and D R Velis, 2015, Radon transform-based microseismic event detection and signal-to-noise ratio enhancement: Journal of Applied Geophysics, 113, 51-63.

73. Ke Chen and M D Sacchi, 2015, Robust reduced-rank filtering for erratic seismic noise: Geophysics, 80 (1), 1-11.

74. I Vera Rodriguez and M D Sacchi, 2014, Microseismic source imaging in a compressed domain: Geophysical Journal International, 198, 1186-1198.

75. Tho N H Tran, L H Le, M D Sacchi, Vu-Hieu Nguyen, and E Lou, 2014, Multichannel filtering and reconstruction of ultrasonic guided wave fields using time intercept-slowness transform: Journal of the Acoustical Society of America, 136 (1), 248-59.

76. A Amsalu and M D Sacchi, 2014, Comparison of multi-frequency selection strategies for simultaneous-source full waveform inversion: Geophysics, 79 (5), R165-R181.

77. N Kazemi and M D Sacchi, 2014, Sparse multichannel blind deconvolution: Geophysics 79 (5), V143-V152.

78. A Ibrahim and M D Sacchi, 2014 Simultaneous source separation using a robust Radon transform: Geophysics, 79, 1, V1-V11.

79. Han Li, M D Sacchi and Liguo Han, 2014, Spectral decomposition and de-noising via time-frequency and space-wavenumber reassignment: Geophysics Prospecting, 62 (2), 244-357.

80. L H Le, Tho N H T Tran and M D Sacchi, 2014, Imaging ultrasonic dispersive guided wave energy in long bones using linear Radon transform: Ultrasound in Medicine and Biology, 40 (11), 2715-2727

81. K C T Nguyen , L H Le, Tho N H T Tran, M D Sacchi, E H M Lou , 2014, Excitation of ultrasonic Lamb waves using a phased array system with two array probes: Phantom and in vitro bone studies: Ultrasonics, 54 (5), 1178-1185.

82. A Stanton and M D Sacchi, 2013, All roads lead to Rome: predictability, sparsity, rank and pre-stack seismic data reconstruction: Recorder, 38 (10), 32-37. **Best article in the Recorder 2013**

83. M Naghizadeh and M D Sacchi, 2013, Sparsity and band-limitation: Two sides of the same coin?: Recorder, 38 (10), 28-31.

84. A Gholami and M D Sacchi, 2013, Fast 3D Blind Seismic Deconvolution via Constrained Total Variation and GCV: SIAM Journal on Imaging Sciences 6 (4), 2350-2369.

85. H Li, L H Le, M D Sacchi, E H M Lou, 2013, Ultrasound Imaging of Long Bone Fractures and Healing with the Split-Step Fourier Imaging Method: Ultrasound in medicine & biology 39 (8), 1482-1490.

86. D Perez, D. Velis and M D Sacchi, 2013, High-resolution prestack seismic inversion using a hybrid FISTA-Least Squares strategy: Geophysics, 78, 5, R185-R195.

87. N. Kreimer, A Stanton and M D Sacchi, 2013, Tensor completion based on nuclear norm minimization for 5D seismic data reconstruction: Geophysics, 78 (6), V273-V284.

88. A Stanton and M D Sacchi, 2013, Vector Reconstruction of Multicomponent Seismic Data: Geophysics, 78, 4, V131-V145.

89. D Bonar and M D Sacchi, 2013, Spectral decomposition with FXY preconditioning: Geophysical Prospecting, 61, s1, 151-165.

90. E Bongajum, J Boisvert and M D Sacchi, 2013, Bayesian linearized seismic inversion with locally varying spatial anisotropy: Journal of Applied Geophysics, 88, 31-41.

91. M Naghizadeh and M D Sacchi, 2013, Multidimensional de-aliased Cadzow reconstruction of seismic records: Geophysics, 78 (1), A1-A5.

92. N Kreimer and M D Sacchi, 2012, Rank reduction of unfolded tensors for prestack denoising and reconstruction: Recorder, 10, 24-27.

93. J J Gao, A Stanton, M Naghizadeh, M D Sacchi and X H Chen, 2013, Convergence improvement and noise attenuation considerations for beyond alias projection onto convex sets reconstruction: Geophysical Prospecting, 61, s1, 138-151.

94. J J Gao, M D Sacchi and X H Chen 2013, A fast reduced-rank interpolation method for pre-stack seismic volumes that depend on four spatial dimensions: Geophysics 78 (1), V21-V30.

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104. I Rodriguez Vera, D Bonar and M D Sacchi, 2011, Improvements in microseismic data processing using sparsity and non-linear inversion constraints: Recorder 9, 24-18.

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106. W Alemie and M D Sacchi, 2011, High-resolution Three-term AVO Inversion by means of a Trivariate Cauchy Probability Distribution: Geophysics, 76, R43-R55.

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115. M D Sacchi and A H Cominguez, A strategy to extract the seismic wavelet based on the homomorphic transform, 16th meeting of the Argentinian Association of Geophysicists, Bahia Blanca, Buenos Aires, October 1991.

6.6   Papers solicited for reprinting in books

M D Sacchi, D R Velis and A H Cominguez, 1994, Minimum entropy deconvolution with frequency-domain constraints: Geophysics, 59, 938-946. Reprinted in "Deconvolution II", Geophysical Reprints No. 17, E. A. Robinson and O. M. Osman (eds.) 1996, Soc. Expl. Geophys.

T J Ulrych, D Velis and M D Sacchi, 1995, Wavelet estimation: revisited: The Leading Edge, 14, 1139-1143. Reprinted in Seismic "Signature Estimation and Measurement", Geophysical Reprints 18, Osman M. Osman and Enders A. Robinson (eds.) 1996, Soc. Expl. Geophys.

6.7   Other publications in the form of chapters in consortia annual reports

- A Valenciano, M Brown, M D Sacchi, and A Guitton,2003, Interval velocity estimation using edge-preserving regularization, Stanford Exploration Project, SEP-114, 123-150.

- B Artman and M D Sacchi, 2004, Basis pursuit for geophysical inversion,Stanford Exploration Project, SEP-114, 151-165.

- M D Sacchi, 2003, High Resolution Imaging *Delphi P&A VIII*, Delft University of Technology, Chapter 7, 120-122.

- A K Dey, M D Sacchi and A Gisolf, 2007, High-Resolution Imaging: file data example, *Delphi P&A XI*, Delft University of Technology, Chapter 5, 100-114.

- SAIG (Signal Analysis and Imaging Group) at the University of Alberta. Annual reports for sponsors with articles by M. D. Sacchi and HQPs for SAIG-1 (2000) to SAIG-23 (2022) can be found in the following site:
https://saig.physics.ualberta.ca/doku.php?id=publications:annualreports

7   Invited Seminars, Lectures and Colloquia

1. Aprendizaje automático y sus aplicaciones a migración de datos sísmicos, CONEXPLO 22, Mendoza, Argentina, Plenary talk, November 2022.

2. An Introduction to Sparsity-Driven and Low-Rank Matrix And Tensor Recovery Methods With Application To Multi- Dimensional Seismic Data Processing, Zhejiang University, Earth Science Department, a 2 Hs Colloquium, December 2022

3. Métodos Robustos para Procesamiento de Datos Sísmicos. XXXI Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas, Mendoza, Argentina, Plenary talk, July 2021

4. Accelerating the convergence of deblending algorithms by a new formulation of the sparsity promoting cost function, ExxonMobil, Houston, Applied Geophysics Seminar series, June 2020

5. Simplicity constraints and their application to seismic data processing and imaging, Earth Science, University of Toronto, March 2020

6. Robust tensor completion methods and applications to 5D seismic data reconstruction, invited talk, SIAM Geoscience Meeting, Houston, March 2019

7. Robust data representation: Application to simultaneous source processing, Colloquium, National University of La Plata, April 2019

8. Multidimensional seismic data reconstruction: Recent advances and the road ahead, 15th International Congress of the Brazilian Geophysical Society, June 2017

9. Full waveform inversion, AAGG, Argentina, Plenary talk, May 2017

10. Three invited lectures, Houston Geophysical Society, November 2016

11. CSEG Technical luncheon, October 2016

12. 5D reconstruction using tensor completion, Stanford Exploration Project, Department of Geophysics, Stanford University, January 2016

13. Sparsity, Predictability and Rank, Stanford Exploration Project, Department of Geophysics, Stanford University, January 2016

14. Fall 2015-Winter 2016 CSEG Distinguished lecture [1]. New and not-so-new applications of low-rank matrix and tensor completion to seismic data processing,

      Earth Sciences, University of Toronto

      Earth Sciences, Dalhousie University

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[1] https://cseg.ca/wp-content/uploads/2016-CDL-Mauricio-Sacchi.pdf

Department of Earth Sciences, Memorial University of Newfoundland

Earth and Ocean Sciences, UBC

Department of Geological Sciences and Geological Engineering, Queen's University

Department of Earth Sciences, Western University

Earth and Environmental Sciences, University of Waterloo

Department of Geosciences, University of Calgary

Department of Geological Sciences, University of Saskatchewan

Department of Physics and Institute for Geophysical Research, University of Alberta

15. Tensor completion problem in exploration seismology, King Abdullah University of Science and Technology, Saudi Arabia, April 2015, Seminar.

16. Practical aspects of regularization and interpolation of (5D) seismic data, XXVII Reunión Cientifíca de La Asociación Argentina de Geofísicos y Geodestas San Juan, Argentina, November 2014, Plenary speaker.

17. 2014 SEG Honorary Lecturer[2]. Practical aspects of regularization and interpolation of (5D) seismic data, presented at the following venues:

Universidad Nacional de Río Negro, General Roca, Argentina

Asociación Argentina de Geólogos y Geofísicos del Petróleo, Buenos Aires

Sociedad Geofísica, Universidad Nacional de la Plata, La Plata, Argentina

Universidade Federal de Rio de Janeiro, Rio de Janeiro, Brazil

Universidade Federal Fluminense, Niterói, Brazil

Observatorio Nacional, Rio de Janeiro, Brazil

Universidade de Campinas, Campinas, Brazil

Universidade Federal da Bahia, Salvador, Brazil

Universidade Federal Rio Grande do Norte, Natal, Brazil

Universidade Federal do Pará, Belém, Brazil

Universidad Industrial de Santander, Bucaramanga, Colombia

Universidad Nacional de Colombia, Medellin, Colombia

Universidad Nacional de Colombia, Bogotá, Colombia

Asociación Colombiana de Geólogos y Geofísicos del Petróleo, Bogotá, Colombia

Geological Society of Trinidad and Tobago and University of West Indies Geophysical Society, Port of Spain, Trinidad and Tobago

Instituto Politécnico Nacional, Mexico DF, Mexico

Universidad Nacional Autónoma de Mexico, Mexico DF, Mexico

Asociación Mexicana de Geofísicos de Exploración, Villahermosa, Mexico

18. Tensor completion for seismic data reconstruction, China Academy of Science, Institute of Geophysics, Beijing, April 2014.

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[2]https://seg.org/Education/Lectures/Honorary-Lectures/2014-HL-Sacchi

19. Sparsity and Nuclear Norm Regularization for Multidimensional (5D) Seismic Data Processing, Seminar to honour Tadeusz Ulrych, Vancouver, September 2013.

20. Sparsity and Nuclear Norm Regularization for Multidimensional (5D) Seismic Data Processing, PIMS Seismic Imaging workshop, Calgary, July 2013.

21. Full Waveform Inversion of Blended Data: Analysis of Multi-frequency Inversion Strategies, Computational Methods in Geophysical Inverse Problems, SIAM Geoscience meeting, Padova, Italy, June 2013.

22. 5D reconstruction of seismic data, Encana, March 2013

23. Two talks on Seismic data reconstruction and inverse problems, Escuela Giambiagi, University of Buenos Aires, Argentina, July 2012.

24. Regularization of seismic data via tensor algebra, Colloquium Department of Earth Sciences, University of Calgary, February 2012.

25. 5D seismic data reconstruction, Institute of Geology Geophysics, Chinese Academy of Science, Beijing, May 2012.

26. 5D seismic data reconstruction, China University of Geoscience, Beijing, May 2012.

27. 5D seismic data reconstruction, China University of Petroleum, Beijing, May 2012.

28. ICIAM 2001, Contemporary issues in geophysics, Vancouver, July 2012.

29. Sparse data representation for the reconstruction of N-dimensional seismic wave-fields, SPIE Wavelets and Sparsity XIV , San Diego, August 2011

30. Application of sparse and rank reduction reconstruction to large-scale industrial seismic reconstruction problems, BIRS Sparse and Low Rank Approximation (5 days workshop), Banff, March 2011

31. From Wiggins' MED to Compressive Sensing: Sparsity in Seismic Data Processing, EAGE workshop, Sparseness and Compressive Sensing: a Confluence of Ideas, Vienna, Workshop. Invited introductory tutorial on sparse representations of geophysical data, May 2011

32. Recent Advances in Regularization and De-noising of Large Data Sets for Exploration Seismology, IRIS Workshop, Plenary Speaker, Snowbird Utah, June 2010

33. Shell Research Centre, Rijswijk, The Netherlands, Colloquium/Seminar, Feb 2011

34. BP America, Houston, TX, Colloquium/Seminar, Jun 2011

35. Representation of Seismic signals via sparse priors and compressive sensing: An overview, Artificial Intelligence Seminar, Department of Computing Science, University of Alberta, June 2010.

36. CSEG Lunchbox Monthly Seminars, Calgary, Colloquium/Seminar, Sep 2010

37. Randomized SVD for seismic noise attenuation, MITACS &Canadian Operational Research Society. Annual Meeting, Edmonton, May 2010

38. Randomized SVD for seismic noise attenuation, UBC-SLIM, Vancouver, May 2010

39. The Old and New in Noise Removal, Wavefield Representation and Data Regularization, Technical Luncheon, CSEG, Calgary, January 2010.

40. Wavefield representation and seismic data reconstruction, Spring Symposium of the GSH/SEG honouring Enders Robinson and Sven Treitel, Houston, March 2010.

41. Adaptive filtering of seismic records, Facultad de Ciencias Astronómicas y Geofísicas, UNLP, La Plata, Argentina, August 2009

42. Preconditioned high-resolution imaging, AGU, Toronto, May 2009 (Invited talk).

43. A tour of high resolution transforms, CSEG, Calgary, Session invited talk, May 2009

44. A tour of methods for seismic wave field reconstruction with emphasis on parsimonious signal representation. Department of Earth and Ocean Sciences, UBC, March 2009.

45. The importance of regularization strategies in processing, imaging and inversion of seismic data. Department of Geosciences , University of Houston, March 2008.

46. The importance of regularization strategies in processing, imaging and inversion of seismic data. Department of Geological Sciences, University of Texas at Austin, December 2007.

47. Numerical Strategies for Seismic Data Reconstruction, Bureau of Economical Geology, University of Texas at Austin, December 2007.

48. Local wave field operators, Radon transforms and sparsity, workshop on "Curvelets, contourlets, seislets, ... in seismic data processing: Where are we and Where are we going?", the 69th annual EAGE conference and exhibition EAGE, London, June 2007.

49. Wave Field Reconstruction with De-migration Operators, Canadian Applied and Industrial Mathematics Society, Annual Meeting, Banff, May 2007 (Invited speaker to the imaging workshop).

50. Migration/inversion: experience with pre-stack LS migration for AVP imaging and the road ahead, keynote speaker, Schlumberger Borehole Seismic Workshop, Vancouver, April 2007

51. Tópicos de *Imaging* de alta resolución, Asociación Argentina de Geólogos y Geofísicos Petroleros, Buenos Aires, July, 2006

52. Reconstrucción de Datos Sísmicos, Asociación Argentina de Geólogos y Geofísicos Petroleros, Buenos Aires, July, 2006

53. Inversion of Angle Gathers, Colloquium, Universidad Nacional de La Plata, July, 2006.

54. High Resolution Imaging: New trends in seismic imaging, Instituto Mexicano del Petróleo (IMP), Ciudad de Mexico, May 2006

55. High Resolution Imaging: New trends in seismic imaging, CSEG, Lunch box Seminars, Calgary, April 2006

56. Large Scale Geophysical Inverse Problems and High Resolution Methods for Imaging the Earth's Interior, Department of Earth and Planetary Sciences, Colloquium, McGill University, Montreal, March 2006.

57. Transform methods for coherent noise removal, ConocoPhillips, Seminar, Houston, January 2006.

58. Regularization of Large-scale Geophysical Inverse Problems, Math and Statistics Colloquium, Department of Mathematics and Statistics, University of Alberta, October, 2005

59. Local Radon Transforms, Time-Frequency Analysis Workshop, BIRS, Banff, October 2005

60. Local Radon Transforms, Shell Canada, Seminar, Calgary, May 2005

61. Regularized AVA imaging, BP Research Group, Seminar, Houston, September 2004

62. Exxon-Mobil Research Group, 3 Seminars, Houston, September 2004

63. Inverse Problems in Exploration Seismology, MITACS, 2 hours Lecture, Calgary, May 2005

64. Reconstruction of Seismic Wave Fields, Workshop on Computational Geosciences, NSF and Colorado School of Mines, 1h Lecture, Golden, Colorado, May 2005

65. Wave equation AVA imaging, University of Houston, Allied Geophysical Laboratory, Houston, September 2004

66. Two (2) Seismic Processing Lectures, Norsk Hydro Research Center, Bergen, Norway, July, 2004

67. A new look at transforms for SNR enhancement, Delphi Consortium Annual Meeting, The Hague, June 2004

68. High Resolution Imaging, Delphi Consortium Annual Meeting, The Hague, June 2004

69. Regularized AVP imaging, Shell Research Center, Rijswijk, June 2004

70. Regularization of Seismic Data, Earth Science Department, Delft University of Technology, October, 2004

71. Regularization of Seismic Data, Eni, Milan, Italy, December 2003

72. Regularized Migration, PIMS Geophysical Inversion Workshop, University of Calgary, July 2003

73. Three (3) seminars on signal processing, The Stanford Exploration Project, Department of Geophysics, Stanford University, June 2003

74. Imaging and Inversion in exploration seismology, Department of Mathematics, Emory University, Atlanta, GA, November 2002

75. High resolution Radon transforms for seismic signal processing, Workshop on Imaging, Mathematical Geophysics Summer School, Stanford University, July-Ago, 2002

76. Numerical implementation of Radon Transforms, CREWES Seminar, Department of Geology and Geophysics, University of Calgary, October 2001

77. Inversion of common angle gathers, Departamento de Geofisica Aplicada, Universidad Nacional de La Plata, Argentina, August 2001

78. Wave equation LS migration, Workshop on Inverse Problems and Imaging, Pacific Institute for Mathematical Research, UBC, Vancouver, June 2001

79. AR, MA and ARMA models in seismic data processing, Department of Geophysics, Heiland Lecture, Colorado School of Mines, Golden Colorado, March 2001

80. Wave equation imaging and inversion of seismic data in complex media, Department of Earth and Ocean Sciences, UBC, Vancouver, October 2000

81. Non-Gaussian models in seismic deconvolution. Department of Geology and Geophysics, University of Calgary, Alberta, February 1999

8   Contribution to the training of highly qualified personnel

8.1   Graduate students I have supervised as single advisor at the University of Alberta

1. Rongzhi Lin, PhD, 2022, Projected gradient descent methods for simultaneous-source seismic data processing (Assistant Professor, Harbin Institute of Technology, China)

2. Breno Bahia, PhD, 2022, Hypercomplex processing of vector-valued seismic signals (Research Geophysicist, Shearwater GeoServices, UK)

3. Ehsan Soleymani, MSc, 2022, Seismic applications of the Radon transform and a new second-order traveltime local transform (IT program at SAIT, Calgary)

4. Fernanda Carozzi, PhD, 2021, Rank-constrained multidimensional reconstruction of seismic data (Seismic Specialist, Paterson Group, Ottawa)

5. Gian Matharu, PhD, 2020, Strategies for elastic full waveform inversion (Machine Learning Developer, Tetra Tech, Edmonton)

6. Gao Wenlei, PhD, 2020, Studies in multicomponent seismic data processing and Kronecker least-squares reverse time migration (Research geophysicist, CGG, UK)

7. Andres Ambros, MSc, 2020, Application of the regularization by denoising method to diving wave tomographic inversion (Institute of Mine Seismology, Mexico)

8. Iliana Papathanasaki, MSc, 2020, Ground roll attenuation with least-squares and robust inversion (Dahrouge Geological Consulting Ltd., Edmonton)

9. Minjun Park, MSc 2019, Automatic semblance velocity analysis using Convolutional Neural Networks (PhD Program, Stanford)

10. Landon Safron, MSc 2018, Multicomponent least-squares Kirchhoff depth migration (Earth Signal Processing, Calgary)

11. Ke Chen, PhD 2018, Elastic Least-squares Reverse Time Migration and Elastic Gauss-Newton Full-waveform Inversion (Assistant Professor, Institute for Unconventional Resources, Beijing, China)

12. Jinkun Cheng, PhD 2017, Gradient projection methods with applications to simultaneous source seismic data processing (System Engineer, MCD, Vancouver)

13. Aaron Stanton, PhD, 2017, Vector interpolation and regularized elastic imaging of multicomponent seismic data (VP Research & Development, Key Seismic Solutions Ltd., Calgary)

14. Wubshet Alemie, PhD, 2017, Time-Lapse Full Waveform Inversion Methods

15. Nasser Kazemi Nojadeh, PhD, 2017, Efficient algorithms for least squares wave equation migration and source signature estimation (Assistant Professor, Université du Québec à Montréal)

16. Linan Xu, MSc, 2017, Acoustic and elastic least-squares two-way wave equation migration with exact adjoint operator (Completed PHD program at ETH, now PDF at University of Lausanne)

17. Rob Ferner, MSc 2017, Applications of Reverse-time Migration (Geophysicist at APEX Geoscience, Edmonton)

18. Amr Ibrahim, PhD 2016, Separating simultaneous seismic sources using robust inversion of Radon and migration operators (Postdoctoral Researcher at Polytechnique Montréall)

19. Amsalu Anagaw, PhD, 2014, Full waveform inversion using simultaneous encoded sources based on first- and second-order optimization methods (Research Scientist at Key Seismic, Calgary)

20. Nadia Kreimer, PhD, 2013, Multidimensional seismic data reconstruction using tensor analysis (Ocean Network Canada, Victoria, Canada)

21. Ke Chen, MSc 2013, Robust matrix rank reduction methods for seismic data processing (Assistant Professor, Institute for unconventional resources, Beijing, China)

22. David Bonar, MSc 2012, Sparsity and group sparsity constrained spectral decomposition of seismic data (Geophysicist, Ovintiv, Calgary)

23. Sam T Kaplan, PhD 2010, Regularized wave equation migration for imaging and data reconstruction (Research Geophysicist, Chevron, Houston, TX)

24. Vicente Oropeza, MSc 2010, The Singular Spectrum Analysis method and its application to seismic data denoising and reconstruction (Geophysicist, Shell, Houston)

25. Amsalu Anagaw, MSc 2009, Total variation and adjoint state methods for seismic wavefield imaging (Research Scientist at Key Seismic, Calgary)

26. Wubshet Alemie, MSc 2009, Regularization of the AVO inverse problem by means of a Multivariate Cauchy Probability distribution

27. Mostafa Naghizadeh, PhD 2009, Parametric reconstruction of multidimensional seismic records (Assistant Professor, Laurentian University, Canada)

28. Somanath Misra, PhD, 2008, Global optimization with application to Geophysics (BHP, Houston)

29. Naser Yousefzadeh, MSc 2008, Least-squares prestack time migration (Geophysicist at Iranian oil company)

30. Soner Bekleric, MSc, 2007, Non-linear time series analysis via Volterra series (Geophysicist, PGS, London)

31. Cristina Moldoveanu-Constantinesu, MSc, 2006, Coherent noise attenuation using Radon techniques (Geophysicist, ION-Geo, Calgary)

32. Juefu Wang, PhD 2005, 3-D Least-squares Wave-equation AVP/AVA Migration of common Azimuth data (President of Primary Geoservices, Calgary)

33. Jiang Feng, MSc 2004, Rock properties inversion with Kirchhoff AVA migration/inversion (Geophysicist, Husky, Calgary)

34. Liu Bin, PhD 2004 , Multi-dimensional reconstruction of seismic data (Geophysicist, TGS, Houston)

35. Henning Kuehl, PhD 2002, Least squares AVA/AVP wave equation migration/inversion (Team Lead Digital Geophysics, Shell, Houston)

36. Veronica Martinez, MSc 2002, Stratigraphic filtering in the Western Canadian Basin (Seismologist & Vulcanologist, National University of La Plata, Argentina)

37. Carrie Youzwishen, MSc 2001, Non-linear sparse and blocky constraints for seismic inverse problems (Geophysicist, Husky, Calgary)

38. Qiang Li, MSc 2000, High-resolution hyperbolic Radon transform multiple removal (Geophysical Consultant at Saudi Aramco, Dhahran, Saudi Arabia)

39. Liu Bin, MSc 1999, Kirchhoff migration in compressed spaces (Geophysicist, TGS Houston)

8.2 Students I have co-supervised at the University of Alberta

1. Gonzalo Rubio, MSc, 2020 Multi-channel rank reduction methods with applications to receiver function reconstruction (R&D Machine Learning Engineer at MDA, Vancouver)
   Principal advisor: M D Sacchi, Co-advisor: Dr Jeff Gu, Physics

2. Tho N.H.T. Tran , PhD 2019, Cortical bone characterization using guided wave ultrasonography (now PDF at Fudan University, China)
   Principal advisor: Dr Lawrence Le, Radiology and Diagnostic Imaging, Co-advisor: M D Sacchi

3. Ismael Vera Rodriguez, PhD 2012, Near real-time estimation of the seismic source parameters in a compressed domain (Research Scientist, NORSAR, Norway)
   Principal advisor: M D Sacchi, Co-advisor: Dr Jeff Gu, Physics

4. Sean Contenti, MSc 2012, Regional reflectivity analyses of the upper mantle using SS precursors and receiver function (Sean is now with Imperial Oil, Calgary)
   Principal advisor: Dr Jeff Gu, Physics, Co-advisor: M D Sacchi

5. Karol Rohraff, MSc 2011, Time series processing: stratigraphic and paleoclimatic implications. Karol became a staff geophysicists with Shell Canada, Calgary)
   Principal advisor: Dr Vadim Kravchinsky, Physics, Co-advisor: M D Sacchi

6. Li, Hongjiang, MSc 2011, Inversion of ultrasonic data for bone characterization (Hongjiang is with a telecommunication company, Beijing, China).
Principal advisor: Dr Lawrence Le, Radiology and Diagnostic Imaging, Co-advisor: M D Sacchi

7. Rui (Rachel) Zheng, PhD 2011, Ultrasonic imaging and cortical thickness determination of long bones (Rachel is now an assistant professor at ShanghaiTech, China)
Principal advisor: Dr Lawrence Le, Radiology and Diagnostic Imaging, Co-advisor: M D Sacchi

8. Yuling An, MSc 2007, Imaging mantle discontinuities and velocity structures using the Radon transform (Yuling joined CGG, Calgary)
Principal advisor: Dr Jeff Gu, Co-advisor: M D Sacchi

9. Sharareh Karmand, MSc, 2006, Eigenstructure-based signal processing for geophysical data analysis (Sharareh became a physics instructor at Grant McEwan University, Edmonton, AB)
Principal advisor: Dr Frances Fenrich, Physics, Co-advisor: M D Sacchi

10. Yifu Qiu, MSc 2006, Ultrasonic wave dispersion and attenuation in cancellous bone (Yifu joined Geo-System, Calgary)
Principal advisor: Lawrence Le, Radiology and Diagnostic Imaging, Co-advisor: M D Sacchi

11. Randy Zhang, MSc, 2005, Simultaneous inversion of time-lapse data (Primary Geoservices, Calgary)
Principal advisor: M D Sacchi, Co-advisor: Dr Doug Schmitt, Physics

8.3   Students from other institutions that I have co-supervised

1. Hongling Chen, PhD, 2022, Deep Neural Networks for high-resolution imaging. Student at Xi'an JiaoTong University funded via CSC[3] to spent part of her PhD working in my lab. (Now PDF at Xi'an JiaoTong)
Principal advisor: Dr Jinghuai Gao at Xi'an JiaoTong University, Co-advisor: M D Sacchi

2. Liu Dawei, PhD, 2022, Deep learning denoising of seismic records. Student at Xi'an JiaoTong University funded via CSC to spent part of the PhD program working in my lab. (Now PDF at Purdue with Dr. Elita Li)
Principal advisor: Dr Wenchao Chen at Xi'an JiaoTong University, Co-advisor: M D Sacchi

3. Mengyao Sun, PhD, 2018, Tomographic inversion by stochastic optimization. Student at University of Science and Technology of China (USTC) who spend a year working with my group (Mengyao is now a PDF at Tsinghua University)
Principal advisor: Jie Zhang at USTC, Co-advisor: M D Sacchi

4. Hairong Wang, PhD 2016, Registration of PP and PS waves via sparsity constraints. Student from Harbin Institute of Technology (HIT) who spent a year working in my group
Principal advisor: Dr Jianwei Ma at HIT, Co-advisor: M D Sacchi

5. Daniel Perez, PhD, 2015, High Resolution AVO inversion (Daniel is now a research scientist with Y-TECH)
Principal advisor: Dr Danilo Velis, UNLP, Co-advisor: M D Sacchi

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[3]China Scholarship Council

6. Li Han, PhD, 2015, Reassignment methods for seismic attribute analysis. Student at Jilin University funded via CSC to spent part of the PhD program in my lab. (Li Han is now with the Technology Research & Development Centre, CNOOC Research Institute, China)
Principal advisor: Dr Liguo Han at Jilin University, Co-advisor: M D Sacchi

7. Jianjun Gao, PhD 2012, 5D seismic data reconstruction via Multichannel Singular Spectrum Analysis. Student from China University of Petroleum Beijing (CUP-B) funded by the CSC program to spend two years working in my group (Jianjun is now an Associate Professor, China University of Geoscience, Beijing China. Jianjun and I continue to collaborate)
Principal advisor: Dr Xiaohong Chen at CUP-B, Co-advisor: M D Sacchi

8. Baoli Wang, PhD 2010 Amplitude preserving Radon-demultiple. Student at Petroleum Geoscience East China funded via CSC to spent part of her PhD working in my lab. (Baoli Wang is now Associate Professor, University of Petroleum Geoscience East China)
Principal advisor: Dr X Y Yin at CUP-East China, Co-advisor: M D Sacchi

8.4 Graduate students currently under my supervision <u>as a single advisor</u>

1. Atila Saraiva Quintela Soares, PhD, Seismic imaging assisted by Deep Neural Operators (Started in 2022)

2. Joaquin Acedo, PhD, Low-impact seismic data acquisition via dispersed-source arrays (Started in 2021)

3. Alejandro Quiaro, PhD, Joint inversion of geophysical datasets (Started in 2021)

4. Kristian Torres Bautista, PhD, Deep-LSRTM: Solving least-squares reverse time migration with learned updating operators (Started 2020)

5. Yi Guo, PhD, Reinforcement Learning for optimal sensing (Started in 2019)

8.5 Current co-supervision of students

1. Anton Bogrash, MSc student at U of A Faculty of Engineering, Geostatistical seismic inversion (started in 2020)
Principal advisor: Dr Jeff Boisvert, Civil and Environmental Engineering, Co-advisor: M D Sacchi

2. Sergio Sosa, PhD student at National University of La Plata, Anisotropic seismic imaging of the Vaca Muerta formation, Neuquen, Argentina (started in 2021)
Principal advisor: Dr Juan Ignacio Sabbione, UNLP. Co-advisor: M D Sacchi

3. Nicolas Tessone, PhD student at National University of La Plata, Optimized least-squares migration of seismic data (started in 2022)
Principal advisor: Dr Juan Ignacio Sabbione, UNLP. Co-advisor: M D Sacchi

4. Shukui Zhang, PhD student from Sun Yat-sen University is funded by CSC to spend one year working in my lab, Imaging of multiple reflections (started in 2020)
Principal advisor: Dr Shaoping Lu at Sun Yat-sen University, Co-advisor: M D Sacchi

5. Weichen Zhan, PhD student from Xiamen University is funded by CSC to spend one year working in my lab, Joint inversion of seismic and electromagnetic wavefields (started in 2020) Principal advisor: Dr Qi Qiang Liu at Xiamen University, Co-advisor: M D Sacchi

8.6   Supervision of postdoctoral fellows (current and past)

1. Dr Rafael Manenti, Tensor-based seismic data regularization, September 2022 to September 2023 (Current).

2. Dr Mohammad Akbar Hosain Zuberi, Application of full waveform inversion to seismic data sets from the Western Canadian Sedimentary Basing, January 2018 to December 2020 (now Research Scientist with TGS, UK)

3. Dr Felix Oghenekohwo, Time-lapse full-waveform inversion, January 2018 to December 2020 (now with Q-eye geophysical services, Calgary)

4. Dr Amsalu Anagaw, January 2017 to December 2019 3D full waveform inversion (now a Research Scientist with Key Seismic, Calgary)

5. Dr Juan Ignacio Sabbione, Restricted domain Radon transforms and applications, May 2015-May 2017 (Associate Professor of Applied Geophysics, UNLP, Argentina)

6. Dr Saulo Martins, Reconstruction and processing of Ground Penetrating Radar data for environmental near surface studies, October 2015-October 2017, funded by Science without borders, Brazil (Professor, Universidade Federal Rural do Rio de Janeiro, Brazil)

7. Dr Jiajun Gao, Tensor completion methods for 5D seismic wavefield reconstruction, June 2014-June 2015 (Associate professor, China University of Geoscience, Beijing)

8. Dr Emmanuel Bongajum, May 2011-May 2013. Geostatistical seismic data inversion (now with CGG Calgary)

9. Dr Khalid Miah, June 2009-September 2011, Fractional Fourier Transforms (NSERC Visiting Fellow at Geological Survey of Canada, now professor at Montana Tech)

10. Dr Mostafa Naghizadeh , September 2009-December 2009, Curvelet transform regularization and coherent noise removal (Assistant professor at Laurentian University, Ontario)

11. Dr Ulrych Theune , 2003-2005, 3D seismic noise attenuation (Principal researcher geophysicist, Equinor, Norway)

12. Dr Jeremy Gallop, 1999-2000, Elastic seismic inversion (Vice-President Services, Ikon Geoscience, Houston)

13. Dr Yexin Liu, 2000-2001, Lithology prediction via Support Vector Machines (Chief Scientist at SoftMirrors Ltd., Calgary)

8.7   Supervision of undergraduate students

Research projects of undergraduate students take usually place during the Spring-Summer term (May to August). Phys 499[4] projects are one-term research projects either in Fall or Winter.

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[4]Physics research project for senior undergraduate students in the Geophysics, Physics and Astrophysics BSc programs

1. Sally Palmers, 2023, Research Assistant and recipient of a SUPRE[5] award working on Dense-array seismology for estimating high-resolution receiver functions (Sally is currently a summer research student in my lab).

2. Aditya Shah, 2022, Research Assistant, Seismic data denoising via Convolutional Neural Networks (finalizing Astrophysics BSc program at U of A)

3. Jayden Platt, 2020, Research Assistant, Kirchhoff least-squares PSTM (now field Geophysicist with Dias Geophysical, Canada)

4. Noel Gore, 2020, Phys 499, Denoising Autoencoder for Seismic Noise Attenuation (Software Engineer, Intuit, Canada)

5. Jessica Zerb, 2017, Research Assistant and Phys 499, Application of SSA to tree-ring datasets (Natural Resources Canada, Data Analyst, Edmonton)

6. Ji Lin, 2017, Research Assistant, Adaptive minimum entropy deconvolution (Completed MSc in my group and now pursuing PhD at University of Calgary)

7. Scott Janzen, 2016, Research Assistant, Converted wave reconstruction (Maverick Inspection Ltd., Edmonton)

8. Matt Halma, 2014, Research Assistant, Total variation regularization (Technology Development Engineer, Lumicks, Amsterdam)

9. Jerrid Gabriel, 2014, Phys 499, Popcorn seismic acquisition (Terracon Geotechnique Ltd., Edmonton)

10. Landon Safron, 2014, NSERC Undergraduate Student Award, Total variation regulation for geophysical inverse problems (Earth Signal Processing, Calgary)

11. Haiyang Hu, 2012, International undergraduate summer internship, Sparse minimum phase deconvolution and surface consistent sparse deconvolution (MSc student, Electrical Eng., Tsinghua University)

12. Rob Ferner, 2011, Research Assistant, Tuneable Q-wavelet decomposition (Geophysicist at APEX Geoscience, Edmonton)

13. Mark Simms, 2011, Research Assistant, Non-minimum phase deconvolution (Lab technician, EAS, University of Alberta)

14. Kenny Kocon, 2009, NSERC Undergraduate Student Award, Learning basis functions for seismic data processing (ESG Solutions, Kingston Ontario)

15. Dave Bonar, 2008, NSERC Undergraduate Student Award, Predictive deconvolution to attenuate internal multiples produced by seam coals (Ovintiv, Calgary)

16. Lauren Stiglitz, 2008, NSERC Undergraduate Student Award, Experimental measurement of acoustic waves in bones (Co-supervised with Dr L. Le, Radiology) (Now librarian at UofA)

17. Devin Baillie, 2007, Phys 499, Imaging by seismic waves propagation and back-propagation (UofA Medical Physics grad program)

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[5]Summer Undergraduate Physics Research Experience

18. Patrick Findley, 2001, Phys 499, GPR surveying applied to archaeological studies (Manager, Senior Geophysicist at Tetra Tech Canada)

19. Josh Harrison, 2001, Phys 499, Analysis of teleseismic data using receiver functions (Shell Canada, Calgary)

20. Sean Chapman, 2000, Phys 499, Non-stationary deconvolution, 2000 (Ovintiv, Calgary)

21. Carl Reine, 2000, Phys 499, Coherence measures for fault detection (Nexen, Calgary)

22. Coleen Wellehan, 1999, Phys 499, Reverse time migration (Cenovous, Calgary)

23. Scott Sverdhal, 1998, Phys 499, Seismic tomography using constrained linear inversion (CNRL, Calgary)

24. Carrie Youzwishen, 1998, Phys 499, Integral geometry and the Radon Transform (Husky, Calgary)

9 Teaching

9.1 Teaching at the University of Alberta

Regular teaching responsibilities in Physics were at 3 courses per year until approximately 2009 that was modified to about 2.5 courses per year. During my two terms as departmental Chair, my nominal teaching schedule was of one course per year. The latter explains the differences in courses per year in the list below. Career average for "Overall, this instructor was excellent is 4.8".

Geoph 326 Seismic Imaging F-1997

Geoph 421 Seismology and the Physical Structure of the Earth W-1998

Geoph 326 Seismic Imaging F-1998

Geoph 623 Inverse Problems in Geophysics F-1998

Geoph 426 Signal Processing in Geophysics F-1999

Geoph 421 Seismology and the Physical Structure of the Earth W-1999

Geoph 426 Signal Processing in Geophysics W-1999

Geoph 326 Seismic Imaging W-2000

Geoph 426 Signal Processing in Geophysics F-2000

Geoph 623 Inverse Problems in Geophysics F-2000

Geoph 336 Seismic Imaging W-2001

Geoph 426 Signal Processing in Geophysics F-2001

Geoph 421 Seismology and the Physical Structure of the Earth F-2001

Geoph 326 Seismic Imaging W-2002

Geoph 623 Inverse Problems in Geophysics W-2002

Geoph 426 Signal Processing in Geophysics F-2002

Geoph 326 Seismic Imaging W-2003

Geoph 421 Seismology and the Physical Structure of the Earth W-2003

— Sabbatical F-2003

— Sabbatical W-2004

Geoph 431 Geophysical Inverse Theory F-2004

Geoph 326 Seismic Imaging W-2005

Geoph 438 Seismic Data Processing W-2005

Geoph 623 Inverse Problems in Geophysics F-2005

Geoph 438 Seismic Data Processing W-2006

Geoph 326 Seismic Imaging F-2006

Geoph 325 Gravity, Magnetic, and Electrical Techniques F-2006

Geoph 326 Seismic Imaging W-2007

Geoph 325 Gravity, Magnetic, and Electrical Techniques F-2007

Geoph 426 Signal Processing in Geophysics F-2008

Geoph 326 Seismic Imaging W-2009

Geoph 431 Geophysical Inverse Theory W-2009

Geoph 326 Seismic Imaging F-2010

Geoph 426 Signal Processing in Geophysics F-2011

Geoph 431 Geophysical Inverse Theory W-2013

Geoph 531 Geophysical Inverse Theory W-2013

Phys 699 Seismic Imaging W-2014

— Administrative leave F-2014

— Administrative leave W-2015

Geoph 531 Geophysical Inverse Theory W-2016

Geoph 326 Seismic Imaging W-2017

Phys 699 Full-waveform Inversion W-2017

Geoph 326 Seismic Imaging W-2018

Geoph 326 Seismic Imaging W-2019

Phys 699 Advanced methods for geophysicists W-2019

Geoph 426 Signal Processing in Geophysics F-2020

Geoph 426 Signal Processing in Geophysics F-2021

Geoph 426 Signal Processing in Geophysics F-2022

— Administrative leave W-2022

— Administrative leave F-2023

Geoph 326 Seismic Imaging W-2023

Geoph 426 Signal Processing in Geophysics W-2023

Geoph 531 Geophysical Inverse Theory W-2023

9.2 Invitations to teach

Introduction to inverse problems, China University of Petroleum, 32 hours, Qingdao, July 2022

Seismic Signal Processing, China University of Petroleum, Quingdao, 32 hours, June 2021

Inverse Problems and Imaging lectures, International School on Astronomy and Geophysics: Inverse Method in Geophysics, National University of La Plata, 8-12 April 2019.

5 Lectures on Inverse Problems, Harbin International Summer School on Applied Mathematics, Harbin Institute of Technology, Harbin, China, August 2017

Invited Professor, Universidade Federal de Natal, Brazil, 3 weeks per year in 2016 and 2017

Invited Professor, Universidad Nacional de San Juan. Graduate course: Advanced signal processing for geophysicists, 30 hours course, San Juan, June 2015.

Invited Professor, China Petroleum University. Graduate course: Advanced signal processing for geophysicists, 32 hours course, Beijing, May 2014.

Invited Professor, China University of Geoscience, Graduate course: Signal processing for geophysicists, 16 hours course, Beijing, April 2013.

Invited Professor, China Petroleum University. Graduate course: Advanced signal processing for geophysicists, 32 hours course, Beijing, April 2013.

Invited Professor, National University of La Plata. Graduate course: Processing and inversion of seismic data with special emphasis on compressive solutions. Graduate program in Geophysics, 32 hours course, La Plata, Argentina, March 2012.

Invited Professor, China Petroleum University. Graduate course: Advanced signal processing for geophysicists, 32 hours course, Beijing, May 2012.

9.3 Short courses for professional societies and companies

I have developed and taught short courses for industry and technical associations concerned with advanced signal processing for applied seismologists.

Processing, Inversion and Reconstruction of Seismic Data, Society of Exploration Geophysicists, 2 days course for their education program, New Orleans, October 2015

Course on data reconstruction, Statoil Beijing Research Centre, Beijing, China, 1 day course, April 2014

Course on signal processing inversion and data reconstruction, CGG Research Centre, Massy, France, 2 days, May 2014

Course on signal processing inversion and data reconstruction, CGG Research Centre, Crawley, UK, 2 days, May 2014

Processing, Inversion and Reconstruction of Seismic data, Society of Exploration Geophysicists, 2 days course for their education program, Houston, February 2014

Processing, Inversion and Reconstruction of Seismic Data, SEG course prepared for Dhahran Geoscience Society (Saudi Arabia), 2 days, November 2013

ABC of seismic data reconstruction, 1 day, CSEG education week, November 2013

ABC of seismic data reconstruction, 1 day, CSEG education week, November 2012

Seismic data regularization and Inversion, Short course offered for ION-Geophysical, 2 days, Houston (TX), June 2012

Two courses on Seismic data reconstruction, 2 days, CGG-Veritas, Houston, September 2012.

Seismic data processing and inversion, SEG course prepared for Kuwait National Oil Company, 4 days, May 2012

Tecnícas y estrategias para la regularización de datos sísmicos, 1 day course, Mar del Plata, Argentina, November 2011

ABC of seismic data reconstruction, 1 day, CSEG education week, November 2011

Seismic data reconstruction, EXPEC Research Centre Saudi Aramco, 3 days, July 2011

ABC of seismic data reconstruction, ConocoPhillips, 1 day, Houston, July 2011

Canadian Society of Exploration Geophysicists, 1 day pre-convention course on Seismic Data Regularization, April 2011

PGS, Leiden, The Netherlands, 2 days course, February 2011

Shell, Rijswijk, The Netherlands, 1 day course on Seismic data regularization, February 2011

Processing, Inversion and Reconstruction of Seismic data, Society of Exploration Geophysicists, 2 days course for their education program, Denver, October 2010

Processing, inversion and regularization of seismic data, SEG Continuing Education Program, 2 days course, in-house for Chevron, San Ramon, CA. April 2010

Processing, inversion and regularization of seismic data, SEG Continuing Education Program, 2 days course, Houston, May 2010

Processing, inversion and regularization of seismic data, CSEG Education Week, 2 days course, November 2009

Inversion and signal processing, 2 days course, Statoil Research Centre, May 2009

Inversion and signal processing, 2 days course, Saudi Aramco, April 2008

Processing, inversion and regularization of seismic data, CSEG Education Week, 2 days course, November 2007

Inversion, processing and reconstruction of seismic data [1 day], ConocoPhillips, Houston, April 2007.

Inversion, processing and reconstruction of seismic data [1 day], BHP-Billiton, Houston, September 2006.

Inverse problems in exploration seismology, PIMS Seismic Imaging Workshop and Summer School [2 days], University of Calgary, August 2006.

Course on seismic data processing and inversion [5 days], IMP (Instituto Mexicano del Petróleo), Ciudad de Mexico, Mexico, February 2007.

Strategies for noise attenuation [2 days], CSEG Education Week, November, 2006

Seismic Data Processing and Inversion, PanAmerican Petroleum [1 day], Buenos Aires, July 2006.

Seismic Data Processing and Inversion, Veritas Argentina, Buenos Aires [1 day], July 2006

Statistical and Transform Methods for Seismic Signal Processing: Short course developed seismic data processing contractors. Offered to the following organizations and companies:

  EAGE Education Days, London, UK, March 2006

  CSEG, Calgary, November 2005

  Norsk Hydro Research Centre, Bergen, Norway, May 2005

  EAGE Education Days, London, UK, March 2005

  CSEG Education Week, October 2004

  Veritas LTD, Calgary, September 2004

  Veritas LTD, Houston, August 2004

  Geophysics program, Dept. of Geosciences, University of Leeds (UK), May 2004

  EAGE Education Days, The Hague, The Netherlands, March 2004

  Veritas LTD, Crawley, UK, March 2004

  Compagnie Générale de Géophysique, Massy, France, January 2004

  CSEG Convention, Calgary, April 2002

  CSEG Convention, Calgary, May 2001

Seismic Signal Processing and Inversion Techniques. Course prepared for geophysicists and geologists from the following companies: Chevron, YPF-Repsol, Tecpetrol, Total, and Veritas, [2 days, 8 hours/day], Buenos Aires, Argentina, August 2001.

Lectures on Seismic Signal Processing. Sponsored by The PanCanadian Geophysics Centre of Excellence [3 days, 7 hours/day], May 1999.

Seismic Processing and Inverse theory. Prepared for FOMEC (an international program sponsored by the World Bank) [4 days, 7 hours/day], La Plata, Argentina, August 1998.

Lectures on Seismic Signal Processing. Course prepared for JAPEX (Japan National Exploration Co.) [5 days course, 7 hours/day], Tokyo, Japan, March 1998.

10 Other evidence of impact and contributions

10.1 Best papers awards and awards received by students

- Best oral presentation to graduate student Wenlei Gao, 2019 SEG 3rd International Workshop on Mathematical Geophysics: Traditional vs. Learning

- Best student poster to undergraduate summer research student Scott Janzen, Geoconvention 2017

- Best student oral presentation to MSc student Landon Safron, Geoconvention 2017

- Best CSEG Luncheon to PhD student Aaron Stanton, 2015

- Best Poster to MSc student Robert Ferner, Geoconvention 2014

- Best Student Geophysical Talk to Amsalu Anagaw, Geoconvention 2014. Amsalu was my PhD student and is a PDF in my group

- **J. Clarence Karcher Award 2013** to Sam Kaplan. Sam was my PhD student.

- Top 30 presentations for the 2012 SEG Annual Meeting to Aaron Stanton, Nadia Kreimer, David Bonar, Mostafa Naghizadeh, and Mauricio Sacchi, A comparison of 5D reconstruction methods.

- Best Poster Award to Aaron Stanton, Nadia Kreimer, David Bonar, Mostafa Naghizadeh, and Mauricio Sacchi, A comparison of 5D reconstruction methods, 2012 SEG Annual Meeting.

- **J. Clarence Karcher Award 2011** to Mostafa Naghizadeh. Mostafa was my PhD student.

- Runner up, CSEG 2011 best student paper to Nadia Kreimer. Nadia was my PhD student.

- Best Student Geophysical Poster Presentation, GeoCanada 2010 conference to Sam Kaplan. Sam was my PhD student.

- We should prioritize education as well as training, an interview with M D Sacchi, Recorder, October 2009. The Recorder is the magazine of the Canadian Association of Exploration Geophysicists.

- Best student paper CSPG CSEG CWLS 2009 Convention: M Naghizadeh and M D Sacchi. Making FX interpolation more robust by spectrum- guided reconstruction.

- SEG best student poster award 2008: M Naghizadeh and M D Sacchi (2008). Adaptive F-X interpolation of curved seismic events via exponentially weighted recursive least squares (EWRLS), SEG Technical Program Expanded Abstracts, 27, 2627-2631.

- Best student paper CSPG CSEG CWLS 2007 Convention: Mostafa Naghizadeh and Mauricio Sacchi, Multi-step Auto-regressive reconstruction of non-uniformly sampled and aliased seismic records

- Best paper award CSEG Recorder, Sacchi M.D., Wang J., and Kuehl H., 2006, Regularized migration/inversion: new generation of imaging algorithms, CSEG Recorder, Volume 31, Special Issue, 54-59.

- Best student paper CSPG-CSEG-CWLS Joint Convention, 2006: Mostafa Naghizadeh and Mauricio Sacchi, FX and FK interpolation methods and further developments for irregularly spaced data

- Honourable mention for poster presentation, CSEG Annual Meeting, 2005: Uli Theune, Douglas Schmitt, and Mauricio Sacchi, Mapping fractures with GPR at Turtle Mountain

- **Clarence Karcher Award 2004** to Dr Henning Kuehl for his work on least-squares wave equation imaging. This is the highest award given by the Society of Exploration Geophysicists to scientists under 35. Henning was my first PhD student.

- Honourable mention, CSEG Annual Meeting, 2003: Henning Kuehl and Mauricio Sacchi for the presentations Least-squares wave-equation migration for AVP/AVA inversion.

- Best student paper, CSEG Annual Meeting, 2001: Carrie Youzwishen and Mauricio Sacchi, An edge preserving algorithm for 2D seismic wave field inversion

- Honourable mention, CSEG Annual Meeting, 2001: Henning Kuehl and Mauricio Sacchi, Least-squares DSR migration using common angle imaging condition.

- Honourable mention, CSEG Annual Meeting, 2001: Henning Kuehl and Mauricio Sacchi, Separable offset least-squares DSR migration of incomplete data

- Outstanding SEG conference expanded abstract, 1994: Mauricio Sacchi and Tad Ulrych, High Resolution Velocity Gathers, SEG 64th International Annual meeting of the Society of Exploration Geophysicists

10.2   External Examiner

Not including University of Alberta roles as examiner.

External PhD thesis examiner, Heather Hardeman, University of Calgary, 2019

External PhD thesis examiner, Ritesh Sharma, University of Calgary, 2019

External PhD thesis examiner, Mai Quyen Pham, L'Université Paris-Est, 2019

External PhD thesis examiner, Soledad Lagos, National University of La Plata, 2019

External PhD thesis examiner, Justin Granek, University of British Columbia, 2016.

External PhD thesis examiner, Haitham Hamid, University of Calgary, 2016.

External PhD thesis examiner, Roohollah Askari, University of Calgary, 2013

External PhD thesis examiner, Peng Chen, University of Calgary, 2013

External PhD thesis examiner, A. K. Dei, Delft University of Technology, 2010

External PhD thesis examiner, Gilles Hennenfent, University of British Columbia, 2008

External PhD thesis examiner, Richard Bale, University of Calgary, 2006

External PhD thesis examiner, Ye Zheng, University of Calgary, 2006

External PhD advisor and examiner, Paul Zwartjes, Delft University of Technology, 2005

External PhD thesis examiner, Jon Downton, University of Calgary, 2005

External MSc thesis examiner, Shauna Oppert, University of Calgary, 2002

External PhD thesis examiner, Yampeng Mi, University of Calgary, 2001

External PhD thesis examiner, R. Ferguson, University of Calgary, 1999

10.3   Editorial work

- Associate Editor for special issue of the journal Geophysics on "Mathematical Geophysics", 2022

- Associate Editor, IEEE transactions of Geoscience and Remote Sensing, 2019-

- Editor-in-chief of the journal Geophysics, 2015-2017

- Editorial Board, Journal of Seismic Exploration, 2015-

- Guest Editor to IEEE Signal Processing Magazine, thematic issue on Geophysical Signal Processing, issue published in February 2012 (Co-editors: Fred Aminzadeh and Sven Treitel)

- Invited Editor for special issue of the journal Geophysics on "Seismic Data Regularization", 2010

- Assistant editor for the journal Geophysics, 2009-2015

10.4   Service to my research and technology community

- Vice-chair, CSEG Foundation, 2023-

- Committee Member, New Frontiers in Research Fund. Transformation 2021 competition. Reviewing Committee Member for the LOI stage for the Social Sciences and Humanities Research Council of Canada (SSHRC)

- Committee Member, New Frontiers in Research Fund. Transformation 2020 competition. Reviewing Committee Member for the LOI stage for the Social Sciences and Humanities Research Council of Canada (SSHRC)

- Co-organizer of SEG 3rd International Workshop on Mathematical Geophysics: Traditional vs. Learning, 2019

- Member of the Board of Management, Arthur B. McDonald Canadian Astroparticle Physics Research Institute, 2017-2021

- Chair of Publications committee, Society of Exploration Geophysicists (SEG), 2017-2019

- Society of Exploration Geophysicists (SEG), member of the Board of Directors, 2015-2017

- Canadian Society of Exploration Geophysicists (CSEG) Foundation, Board Member, 2013-2015

- Organizer of an international PIMS workshop on Seismic Imaging at the University of Alberta, May 2015

- Member of the technical committee of the SEG 2011 conference. I was in charge of the review process of papers in the area of seismic data regularization. I was also in charge of forming the data regularization session.

- Organizer of Workshop for EAGE conference, Regularization of Seismic data, Amsterdam, 2009

- Session Convener, AGU 2009, Toronto.

- Member of the technical committee for the CSEG annual meeting, Calgary, May 2007.

- Inaugural Chair of The Distinguished Lecture Program Committee, CSEG, 2005-2007.

- PIMS Seismic Imaging Workshop and Summer School, Organizer and Instructor, University of Calgary, August 2006.

- Alberta Ingenuity, Fellowships Review Committee, 2006.

- Convener and organizer, workshop on seismic deconvolution, CSEG annual meeting, 2005.

- Member of the technical committee for the CSEG annual meeting, Calgary, May 2002.

- I serve as reviewer for the NSERC RGPIN and NSERC CDR programs and NSF proposals. About 3 proposals per year.

- I served as reviewer for the following journals: Geophysics, Geophysical Journal International, IEEE Trans. on Signal Processing, IEEE Trans. on Geosciences and Remote Sensing, IEEE Trans. on Image Processing, Computers and Geosciences, Geophysical Prospecting.I review about 10-15 papers per year.

- Session Chair at the SEG and CSEG annual meetings ($>$ 10 times since 1997)

- External reviewer for tenure and promotion cases at the following universities: Carleton University, Colorado School of Mines (3), Memorial University of Newfoundland (2), Stanford, UBC (2), University of Calgary (2), University of Toronto, Tufts.

10.5   Service to the University of Alberta

- Faculty Evaluation Committee 2010-2015 and 2016-2021 . I interviewed and prepared merit recommendations for Physics academic staff. I also reviewed about 300 annual reports per year for the whole Faculty of Science.

- Chairs Council Executive, 2018-2020 (Elected to represent Chairs, CCE liaisons with the U of A Provost office.)

- Chair, Department of Physics, 2016-2021 (second term)

- Chairs Council Executive, 2013-2015 (Elected to represent Chairs, CCE liaisons with the U of A Provost office.)

- Chair, Department of Physics, 2010-2015 (first term)

- As Chair of Physics (2010-201), I have formed hiring committees, interviewed candidates and made offers to candidates for faculty positions. I also was in charge of discussing start-up packages with the Faculty of Science and candidates. Liaison with the Faculty of Science to prepare CFI applications for new faculty members and assisted in securing provincial and university matching portion for pre-tenure faculty. People I hired:

    - 3 positions in Condensed Matter Physics (Dr Joseph Maciejko, Dr Lindsay LeBlanc, Dr Igor Boetcher)
    - 2 positions in Astrophysics (Dr Erik Rosolowsky, Dr Rodrigo Fernandez)
    - 3 positions in Astroparticle Physics (Dr Claudio Kopper, Dr Marie-Cecile Piro and Dr Juan Pablo Yanez Garza)
    - 2 positions in Biophysics (Dr Michael Woodside and Dr Daniel Charlebois).

- As Chair of Physics (2010-2021), I have written recommendation cases for tenure and promotion that were submitted to our Faculty Evaluation Committee. I was in charge of composing the list of external reviewers, collecting departmental feedback, and assessing feedback from the tenure committee and making the final recommendation. The full responsibility of the faculty assessment and recommendation for tenure and promotion is on the chair who presents (and defends) recommendations to the Faculty Evaluation Committee. I have presented the following cases:

    Promotion to Full Professor, Dr Alexander Penin, Theoretical Particle Physics, 2010

    Promotion to Full Professor, Dr Roger Moore, Experimental Particle Physics, 2012

    Promotion to Full Professor, Dr Mirko van der Baan, Applied Geophysics, 2012

    Promotion to Associate Professor and tenure, Dr Craig Heinke, Astrophysics, 2012

    Promotion to Associate Professor and tenure, Dr Claire Currie, Geodynamics, 2012

    Promotion to Associate Professor and tenure, Dr Carsten Krauss, Neutrino Physics, 2013

    Promotion to Associate Professor and tenure, Dr Mathieu Dumberry, Geodynamics, 2013

    Promotion to Full Professor , Dr Vadim Kravchinsky, Paleomagnetism, 2013

    Promotion to Associate Professor and tenure, Dr Darren Grant, Neutrino Physics, 2014

    Promotion to Associate Professor and tenure, Dr Natalia Ivanova, Theoretical Astrophysics, 2014

    Promotion to Associate Professor and tenure, Dr Gregory Sivakoff, Astrophysics, 2016

    Promotion to Full Professor, Dr Micheal Woodside, Biophysics, 2016

    Promotion to Associate Professor and tenure, Dr Erik Rosolowsky, Astrophysics, 2016

    Promotion to Full Professor, Dr Yu (Jeff) Gu, Seismology, 2017

    Promotion to Full Professor, Dr Craig Heinke, Observational Astrophysics, 2017

    Promotion to Full Professor, Dr Natalia Ivanova, Theoretical Astrophysics, 2018

    Promotion to Full Professor, Dr Claire Currie, Geodynamics, 2018

    Promotion to Full Professor, Dr Sharon Morsink, Theoretical Astrophysics, 2019

    Promotion to Associate Professor and tenure, Dr Lindsay Leblanc, Quantum Physics, 2019

Promotion to Associate Professor and tenure, Dr Joseph Maciejko, Theoretical Physics, 2019

Promotion to Full Professor, Dr John Davis, Low Temperature Physics, 2020

- As chair and as faculty member of the Department of Physics, I was a member of the following hiring committees:

  Killam Memorial Chair, Mathematical and Statistical Sciences (Dr Yingfei Yi, 2014)

  Dean of Science (Dr Jonathan Schaeffer, 2012)

  Integrated Petroleum Geoscience Program (Dr Mirko van der Baan, 2008)

  Canada Research Chair in Gravitational Physics (Dr Frans Pretrorius, 2005)

  Seismology (Dr Yu (Jeff) Gu, 2002)

  Geophysics (Dr Martyn Unsworth, 2000)

  Experimental Condensed Matter Physics (Dr Alkiviathes Meldrum, 1999)

- Associate Chair Research, Department of Physics, 2009-2010

- Member the UofA Mexico Council, 2009-2011

- 2006-2008: Coordinator of the Geophysics Focus Area

- 2006-2008: Faculty of Science Advisory Selection Committee

- 2006: University of Alberta International, member of the Energy Mission to Mexico, including talks about energy related research at UNAM (Universidad Nacional Autónoma de Mexico) and IMP (Instituto Mexicano del Petróleo).

- 2005: Advisory selection committee for the director of the Institute for Geophysical Research

- 2005-2006: Physics colloquia organizer (I organized the visit of 20 international speakers)

- 2002-2008: Mentoring Program (Faculty of Science). I was Dr Yu (Jeff) Gu mentor from 2002 until tenure.

- 2001-2003: Graduate admission committee (Physics)

- 1999-2003: Computing committee (Physics)

- 1999-2000: Curriculum Renewal Committee (Physics)

- 1998-: MACI founding member (UofA). Alberta large computational facility replaced by WestGrid and now by ComputeCanada.

- 1998-2000: Organizer of the Geophysics Seminars in the Department of Physics.

- 1998-2000: Development of recruiting strategy for the Geophysics program. I was in charge of preparation of a poster and deployment of a geophysics booth at CSEG annual convention.

- 1998-2002: Co-Organizer of the Annual Symposium of the Institute for Geophysical Research, Faculty of Science, University of Alberta.

11   Funding

Excluding grants were I am not PI. The reported funds for Sacchi/SAIG constitute membership fees from companies to sponsor the SAIG[6] program. Typical fee to participate in SAIG is CDN 35K per year and companies sign multi-year agreements. SAIG goes back to 2001 but I am reporting funds for SAIG since 2009. These funds are used to support graduate students and PDFs.

Principal Investigator	Grant	Amount (CND)	Period
Sacchi	NSERC Discovery Grant	75,000/year	2022-2027
Sacchi	NSERC Discovery Grant	69,000/year	2016-2021
Sacchi	NSERC Discovery Grant	50,000/year	2011-2015
Sacchi	NSERC Discovery Grant	39,800/year	2006-2010
Sacchi	NSERC Discovery Grant	39,000/year	2002-2005
Sacchi	NSERC Discovery Grant	33,000/year	1998-2001
Sacchi	Faculty of Sc. Grant to Chair of Physics	40,000/year	2016-2021
Sacchi	Faculty of Sc. Grant to Chair of Physics	40,000/year	2010-2015
Sacchi	CFREF Futures Energy Technologies	100,000/year	2019-2021
Sacchi/SAIG	BP	105,000	2023-2026
Sacchi/SAIG	CGG	175,000	2023-2028
Sacchi/SAIG	BGP	175,000	2020-2025
Sacchi/SAIG	BP	175,000	2017-2022
Sacchi/SAIG	ConocoPhillips	175,000	2016-2021
Sacchi/SAIG	ENI	105,000	2016-2018
Sacchi/SAIG	CGG	175,000	2015-2019
Sacchi/SAIG	ION GX Technology	105,000	2013-2018
Sacchi/SAIG	ARCIS/TGS	200,000	2012-2022
Sacchi/SAIG	Key Seismic Solutions	240,000	2012-2021
Sacchi/SAIG	ExxonMobil	315,000	2010-2020
Sacchi/SAIG	PGS	437,000	2010-2015
Sacchi/SAIG	Chevron	439,000	2010-2024
Sacchi/SAIG	Shell	328,000	2009-2018

12   Signal Analysis and Imaging Group (SAIG)

The Signal Analysis and Imaging Group is a consortium for research in the area of seismic data processing and imaging. SAIG has enabled me to secure funding for many of my students and PDFs. SAIG also offers an opportunity for HQPs to interact with companies and access to professional development by having close contact with industrial sponsors.

Access to annual reports for the sponsors of SAIG is provided in the following site:
http://saig.physics.ualberta.ca/

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[6]Signal Analysis and Imaging Group

12.1   Open source software

In collaboration with HQPs, my lab has developed seismic data processing software that can be dowloaded by the community.

SeismicLab is a Matlab package I developed in 1998 and I continue to maintain. It provides capability to read/write and process seismic reflection data
https://github.com/msacchi/SeismicLab

SeismicJulia is our current effort in developing a modern seismic data processing platform in Julia
https://github.com/SeismicJulia