

Arthur B. Weglein

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Professional Experience

Hugh Roy and Lillie Cranz Cullen Distinguished University Chair in Physics, 2010 – present,
Hugh Roy and Lillie Cranz Cullen Distinguished Professor in Physics, 2002 – 2010,
Professor, Dept. of Physics, 2002 – present,
Professor, Dept. of Earth and Atmospheric Sciences, 2002 – present,
Director, Mission-Oriented Seismic Research Program, 2001 – present,
Margaret S. and Robert E. Sheriff Endowed Faculty Chair in Applied Seismology, 2000 – 2002,
Visiting Professor and Member, Board of Directors, DELPHI Project, Applied Physics Dept., *Delft University of Technology*, Delft, The Netherlands, 1999 – 2000,
Senior Research Advisor, Exploration Research and Technical Services, *ARCO Exploration and Production Technology*, Plano, Texas, 1995 – 2000,
Scientific Advisor, Schlumberger Cambridge Research, *Cambridge, United Kingdom*, 1992 – 1995,
Visiting Professor at PPPG/UFBA, Graduate Program, *Federal University of Bahia*, Salvador, Brazil, 1989 – 1990,
Research Advisor, Research and Technical Services, *ARCO Exploration and Production Technology*, Plano, Texas (three-year leave-of-absence, beginning December 1992), 1987 – 1992,
Research Associate, *ARCO Oil and Gas Company*, Plano, Texas, 1985 – 1987,
Adjunct Associate Professor, *Columbia University*, Aldridge Laboratory, New York City, New York, 1982 – 1992,
Lecturer and Adjunct Research Professor, *University of Texas at Dallas*, Programs in Mathematical Sciences, 1982 – 1992,
Staff Research Scientist, Research and Development, *SOHIO Petroleum Company*, Dallas, Texas, 1982 – 1985,
Adjunct Professor, *University of New Orleans (LSU)*, Physics Department, 1981 – 1983,
Senior Research Scientist, *Cities Service Company*, Tulsa, Oklahoma, Assignment: Project leader of Seismic Modeling and Inversion, 1980 – 1982,
Adjunct Associate Professor, *University of Tulsa*, Mathematics Department, 1979 – 1982,
Research Scientist, *Cities Service Company*, Tulsa, Oklahoma, 1978 – 1980

Robert A. Welch Postdoctoral Fellow, University of Texas at Dallas, Supervisor: Professor Donald Rapp (now at JPL), 1976 – 1978

Research Assistant, 1971 – 1975,
Department of Physics, *Graduate Center of the City College of New York*, New York City, New York.
Thesis Advisor: Professor Marvin H. Mittleman

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Education

Ph.D. in Physics *Graduate Center of the City College of New York, 1975*

M.S. in Physics *City College of New York, 1969*

B.S. in Mathematics *City College of New York, 1964*

Honors

2003 SEG Distinguished Lecturer - The 2003 SEG DL, "A perspective on the evolution of processing seismic primaries and multiples for a complex multidimensional earth," was ultimately presented in 25 SEG Sections in six countries.

Distinguished Townsend Harris Medal of the City College of the City University of New York, 2008, the Townsend Harris Medal is highest honor to CCNY alumni

SEG Reginald Fessenden Award, 2010

Certificate of Excellence presented by the College of Natural Sciences and Mathematics, 2014

SEG Maurice Ewing Medal, 2016, the SEG's highest honor and recognition

Scientific Publications

1. Weglein, A. B. "Optimization of approximate solutions of the time-dependent Schrodinger Equation". *Phys. Rev.*, A14, 1810, (1978).
2. Weglein, A. B., and Rapp, D. "Variational treatment of charge transfer reactions". *Gas Phase Ion Chemistry*. Vol. 2, pp. 199–241, New York: Academic Press 1979.
3. Silvia, M. T., and Weglein, A. B. "A method for obtaining a near-field inverse scattering solution to the acoustic wave equation." *J. Acous. Soc. of Am.*, 69, pp. 478–482 (February 1981).
4. Weglein, A. B., and Silvia, M. T. "A scattering theory approach to the identification of the Helmholtz Equation; A near-field solution." *J. Acous. Soc. of Am.*, 69, pp. 483–488 (February 1981).
5. Weglein, A. B., Boyse, W. E., and Anderson, J. E. "Obtaining three dimensional velocity information directly from reflection seismic data; an inverse scattering formalism." *Geophysics*, vol. 46, no. 8, (1981).
6. Weglein, A. B. "Near-field inverse scattering formalism for the three dimensional wave equation; The inclusion of a priori velocity information." *J. Acous. Soc. of Am.*, 71, (5), pp. 1179–1182, (May 1982).

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7. Weglein, A. B. "Multidimensional seismic analysis; migration and inversion." Invited paper for the special issue on Seismic Analysis and Discrimination for Geoexploration 20 (1/2), pp. 47–60, (1982), reprinted in a Monograph Special Issue, Seismic Signal Analysis and Discrimination, C. H. Chen, Editor (1982).

8. Weglein, A. B., and Gray, S. H. "The sensitivity of Born inversion to the choice of reference velocity; A simple example." Geophysics, vol. 48, no. 1, pp. 36–38, (January 1983).

Scientific Publications (continued)

9. Keys, R. G., and Weglein, A. B. "Generalized linear inversion and the first Born theory for acoustic media." J. Math. Phys. 24 (6) pp. 144–149, (1983).

10. Bednar, J. B., Redner, R., Robinson, E. A., Weglein, A. B., Edited book "Inverse Scattering: Theory and Applications", SIAM, (Philadelphia, 1983).

11. Ramm, A. G., and Weglein, A. B., "Inverse scattering for geophysical problems. II. Inversion of acoustical data." J. Math. Phys., 25, 3231–3234, (1984).

12. Weglein, A. B., "Comment on optimization of approximate solutions to the time dependent Schrodinger Equation." Phys. Rev. A, (May 1985), p. 4025.

13. Weglein, A. B. "The inverse scattering concept and its seismic application." Chapter in Developments in Geophysical Exploration Methods, vol. 6, edited by A. A. Fitch (Elsevier - Applied Science Publishers), (1985) pp. 111–138, reprinted in "Inversion of Geophysical Data." Geophysics reprint series, no. 3, Ed. By L. R. Lines, 543 p. 1989, Society of Exploration Geophysicists.

14. Weglein, A. B., Violette, P. B., and Keho, T. H., "Using multiparameter Born theory to obtain certain exact multiparameter inversion goals." Geophysics vol. 51, no. 5, (May 1986) pp. 1069–1074.

15. Hooshyar, M. A., and Weglein, A. B. "Inversion of the two-dimensional SH elastic equation," J. Acoust, Soc. Am., vol. 79, no. 5. Pp. 1280–1283 (May 1986).

16. Weglein, A. B. and Wolf, M.A. "Migration-inversion and finite offset aperture." Seismic Wave Scattering and Seismic Anisotropy, pp. 95–134, Earth Resources Laboratory, M.I.T. (1988).

17. Coen, S., Cheney, M., and Weglein, A. B. "Velocity and density of a two dimensional acoustic medium from point source surface data." J. Math. Phys. 25 (6) pp. 1857–1867 (1989).

18. Stolt, R. H., Weglein, A. B., "Migration and inversion of seismic data." Invited paper for Golden Anniversary Issue of Geophysics vol. 50, no. 12, pp. 2458–2472,

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(December, 1985) reprinted in "Inversion of Geophysical Data." Geophysics reprint series; no. 3, L. R. Lines, Editor, 543 pp. (1989) Society of Exploration Geophysicists.

19. Devaney, A. J., and Weglein, A. B., "Inverse scattering using the Heitler equation." *Inverse Problems*. (December 1989), vol. 5, no. 3, pp. 49–52.
20. Carvalho, P.M., and Weglein, A. B., Examples of a Nonlinear Inversion Method Based on the T Matrix of Scattering Theory: Application to Multiple Suppression. *SEG Expanded Abstracts*, 1319-1322, (1991)
21. Carvalho, P.M., Weglein, A. B., and Stolt, R.H., Nonlinear inverse scattering for multiple suppression: Application to real data. Part I. *SEG Expanded Abstracts*, 1093-1095, (1992)
22. Weglein, A. B., and Devaney, A.J. "Inverse Source Problem in The Presence of External Sources." in "Inverse Problems in Scattering and Imaging (Proceedings Volume)", 170-176 (1992).
23. Weglein, A. B., and Secret, B. G. "Source signature identification for a multidimensional acoustic or elastic earth" invited paper, *Geophysical Inversion*; Editors, J. B. Bednar, et al., SIAM, Philadelphia, pp. 427–436 (1992).
24. Weglein, A. B. "What can seismic inverse scattering really do for you today?" Invited paper, *Geophysical Inversion*, editors; J. B. Bednar et al., SIAM, Philadelphia, pp. 20–45 (1992).
25. Weglein, A. B., Devaney, A. J. "The inverse source problem in the presence of external sources" *Inverse Problems in Scattering and Imaging*, pp. 170–176, Ed. M. A. Fiddy, S.P.I.E., vol., 1767, Bellingham, Washington, 1992.
26. Araujo, F.V., Weglein, A.B, Carvalho, P.M., Stolt, R.H., Inverse scattering series for multiple attenuation: An example with surface and internal multiples. *SEG Expanded Abstracts*, 704-706, (1994)
27. Carvalho, P.M., and Weglein, A. B., Wavelet estimation for surface multiple attenuation using a simulated annealing algorithm. *SEG Expanded Abstracts*, 1481-1484, (1994)
28. Coates, R.T., and Weglein, A. B., Internal multiple attenuation using inverse scattering: Results from prestack 1 & 2D acoustic and elastic synthetics. *SEG Expanded Abstracts*, 1522-1525, (1996)
29. Weglein, A. B., and Secret, B. G. "Wavelet estimation in a multidimensional acoustic or elastic earth." *Geophysics*, vol. 55, no. 7, (July 1990), pp. 902–913, reprinted in "Seismic Source Signal Estimation and Measurement" edited by O. M. Osman and E. A. Robinson, *Geophysics reprinting series*, no. 18, (1996).

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30. Mosher, C., Kehe, T. H., Weglein, A. B., and Foster, D. J., “The impact of migration on AVO”, *Geophysics*, vol. 61, no. 6, pp. 1603–1615, (1996).
31. Ikelle, L. T., and Weglein, A. B. “Attenuation of free-surface multiples in multi-offset VSP data” *J. of Seismic Exploration*, vol. 5, no. 4, pp. 363–378, (1996).
32. Ikelle, L. T., Roberts, G., and Weglein, A. B. “Source signature estimation based on the removal of first-order multiples.” *Geophysics*, vol. 62, no. 6, (November–December 1997): p. 1904–1920.
33. Weglein, A. B., Stolt, R. H., Gasparotto, F. A., Carvalho, P. M., and Stolt, R. H. “Inverse scattering series method for attenuating multiples in seismic data” *Geophysics*, vol. 62. no. 6 (November – December 1997): p.1975–1989, 12 Figs.
34. Weglein, A. B., Matson, K., “Inverse-scattering interval multiple attenuation: an analytic example and subevent interpretation” in *Mathematical Methods in Geophysical Imaging*, Siamak Hassanzadeh, Editor, *Proceedings, of SPIE Vol. 3453*, 1008–1017 (1998).
35. Verschuur, D.J., Berkhout, A.J., Matson, K.H., Weglein, A.B., Young, C.Y., Comparing the interface and point-scatterer methods for attenuating internal multiple: A study with synthetic data—Part 1. *SEG Expanded Abstracts*, 1519-1522, (1998)
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37. Weglein, A. B., and Stolt, R. H. “The wave physics of downward continuation, wavelet estimation, volume and surface scattering; 2. Approaches to linear and non-linear migration-inversion” invited paper for *Mathematical Frontiers in Reflection Seismology*, editor W. W. Symes, SIAM, Philadelphia, (to appear 1999).
38. Hill, S. J., Weglein, A. B., and Dragoset, W., Editors special issue of *The Leading Edge on Multiple Attenuation*, January 1999.
39. Weglein, A. B., “Multiple attenuation: an overview of recent advances and the road ahead (1999)”, *The Leading Edge*, p.40–44, January 1999.
40. Matson, K.H., Paschal, D., and Weglein, A.B., “A comparison of three multiple attenuation methods applied to a hard water-bottom data set”, *The Leading Edge*, January 1999, p. 120–126.
41. Weglein, A. B., “How can the inverse-scattering methods really predict and subtract all multiples from a multidimensional earth with absolutely no subsurface information?” *The Leading Edge*, January 1999 p.132–136.

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42. Weglein, A.B. and Stolt, R.H., "Migration-Inversion revisited (1999)" *The Leading Edge*, August 1999, p. 950–952, 975.
43. Weglein, A.B., Beydoun, W. and Gray, S., Editors, Special Issue of *The Leading Edge* on Migration-Inversion, August 1999.
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45. Weglein, A.B., Tan, T.H, Shaw, S.A., Matson, K.H., Foster, D.J., Prediction of the wavefield anywhere above an ordinary towed steamer: Application to source waveform estimation, demultiple, deghosting, data reconstruction and imaging. *SEG Expanded Abstracts*, 2413-2415, (2000)
46. Weglein, A.B., Shaw, S.A., Matson, K.H., Sheiman, J.L., Stolt, R.H., Tan, T.H., Osen, A., Correa, G.P., Innanen, K. A., Guo, Z., and Zhang, J., *New Approaches to Deghosting Towed-Streamer and Ocean-Bottom Pressure Measurements*, 2002: Proceedings of the Society of Explorational Geophysicists/Salt Lake City 2002 International Exposition and 72nd Annual Meeting, Salt Lake City, Utah, U.S.A.
47. Weglein, A.B., D.J. Foster, K.H. Matson, S.A. Shaw, P.M. Carvalho, D. Corrigan "*Predicting the correct spatial location of reflectors without knowing or determining the precise medium and wave velocity: Initial concept, algorithm and analytic and numerical example*" *Journal of Seismic Exploration*, 10, 367–382. January 2002
48. Weglein, A.B., Araujo, F.V., Carvalho, P.M., Stolt, R.H., Matson, K.H., Coates, R.T., Corrigan, D., Foster, D.J., Shaw. S.A., and Zhang, Z. "Inverse scattering series and seismic exploration" *Inverse Problems*, Invited Topical Review, 19,2003, R27-R83.
49. Weglein, A. B. and Innanen, K. A., Simultaneous Imaging and Inversion with the Inverse Scattering Series, 2003: Proceedings of the Eighth International Congress of the SBGf and Fifth Latin American Geophysical Conference, Rio de Janeiro, Brazil, September 14-18.
50. Weglein, A. B and Innanen, K. A., Construction of Absorptive/Dispersive Wave Fields with the Forward Scattering Series, 2003: *Journal of Seismic Exploration*, 12: 259-282.
51. Weglein, A.B. and S.A. Shaw, "Imaging seismic reflection data at the correct depth without specifying the precise velocity model: initial numerical examples of an inverse scattering subseries" in *Frontiers of remote sensing information processing*, C.H. Chen (Ed.), World Scientific Press. 2003

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52. Nita B.G. and Weglein A.B.: Imaging with t versus τ : implications for the inverse scattering internal multiple attenuation algorithm (2004), SEG Expanded Abstracts, Denver, Colorado.
53. Weglein A.B., Nita B.G., and Matson K.H., Forward scattering series and seismic events: far field approximations, critical and post-critical events (2004), SIAM Journal of Applied Mathematics, Vol. 64, No. 6, pp. 2167-2185.
54. Innanen, K. A. and Weglein, A. B., Linear Inversion for Absorptive/Dispersive Medium Parameters, 2004: Proceedings of the Society of Explorational Geophysicists/Denver 2004 International Exposition and 74th Annual Meeting, Denver, Colorado, U.S.A.
55. S.A. Shaw, Weglein, A. B., K.H. Matson, D.J. Foster and R.G. Keys, "Isolation of a leading order depth imaging series and analysis of its convergence properties for a 1-D acoustic medium", Journal of Seismic Exploration. November 2004
56. Ramirez, A. and Weglein, A., Progressing the analysis of the phase and amplitude prediction properties of the inverse scattering internal multiple attenuation algorithm. Journal of Seismic Exploration. April 2005
57. Weglein, A. B., and Dragoset, W., Editors, "Multiple Attenuation" SEG Geophysics Reprint Series No. 23, 2005, 1042 pp.
58. Weglein, A.B., Zhang, H., The inverse scattering series for tasks associated with primaries: depth imaging and direct non-linear inversion of 1D variable velocity and density acoustic media. SEG Expanded Abstracts, 24, no.1, 1705-1708 (2005)
59. Weglein, A.B., Zhang, J., Extinction theorem deghosting method using towed streamer pressure data: analysis of the receiver array effect on deghosting and subsequent free surface multiple removal. SEG Expanded Abstracts, 24, no.1, 2095-2098, (2005)
60. Weglein, A.B., Innanen, K., Towards non-linear construction of a Q-compensation operator directly from measured seismic reflection data. SEG Expanded Abstracts, 24, no.1, 1693-1696, (2005)
61. Guo, Z., Weglein, A.B., Tan, T. Hing, Using pressure data on the cable to estimate the seismic wavelet. SEG Expanded Abstracts, 24, no.1, 2390-2393, (2005)
62. Ramirez, A., Weglein, A.B., An inverse scattering internal multiple elimination method: beyond attenuation, a new algorithm and initial tests. SEG Expanded Abstracts, 24, no.1, 2115-2118, (2005)

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63. Weglein, A.B., Stolt, R.H., Carvalho, P.M., Examples of a nonlinear inversion method based on the T matrix of scattering theory: Application to multiple suppression. SEG Expanded Abstracts, 697-700, (2005)
64. Weglein, A.B., How can the inverse-scattering method really predict and subtract all multiples from a multidimensional earth with absolutely no subsurface information? The Leading Edge, 952-956, (2005)
65. Weglein, A.B., Multiple Attenuation: An overview of recent advances and the road ahead. SEG Expanded Abstracts, 947-951, (2005)
66. Weglein, A.B., Coates, R.T. Internal multiple attenuation using inverse scattering: Results from prestack 1-D and 2-D acoustic and elastic synthetics. SEG Expanded Abstracts, 707-710, (2005)
67. Weglein, A.B., Carvalho, P.M., Wavelet estimation for surface-related multiple attenuation using a simulated annealing algorithm. SEG Expanded Abstracts, 757-761, (2005)
68. Weglein, A.B., Stolt, R.H., Carvalho, P.M., Nonlinear inverse scattering for multiple suppression: Application to real data. Part 1. SEG Expanded Abstracts, 701-703, (2005)
69. Berkhout, A.J., Vershuur, D.J., Weglein, A.B., Wave theoretic approaches to multiple attenuation: concepts, status, open issues, and plans: Part 1. SEG Expanded Abstracts, 986-992, (2005)
70. Weglein, A.B., Matson, K., Inverse-scattering internal multiple attenuation: An analytic example and subevent interpretation. SEG Expanded Abstracts, 742-752, (2005)
71. Weglein, A.B., Nita, B.G., Innanen, K.A., Otnes, E., Shaw, S.A., Liu, F., Zhang, H., Ramirez, A.C., Zhang, J. Pavlis, G.L., Fan, C., Using the inverse scattering series to predict the wavefield at depth and the transmitted wavefield without an assumption about the phase of the measured reflection data or back propagation in the overburden, Geophysics, 71, no.4, SI125-SI137, (2006)
72. Fan, C., Pavlis, G.L., Weglein, A.B., Nita, B.G., Removing free-surface multiples from teleseismic transmission and constructed reflection responses using reciprocity and the inverse scattering series. Geophysics, 71, no.4, SI71-SI78, (2006)
73. Zhang, J., Weglein, A.B., Application of extinction theorem deghosting method on ocean bottom data. SEG Expanded Abstracts, 25, no. 1, 2674-2678, (2006)
74. Liu, F., Weglein, A.B., Innanen, K.A., Nita, B.G., Multi-dimensional seismic imaging using the inverse scattering series. SEG Expanded Abstracts, 25, no. 1, 3026-3030, (2006)

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75. Weglein, A.B., Removing multiples and imaging and inverting primaries beneath a complex ill-defined overburden: defining and addressing the pressing seismic challenge. SEG Expanded Abstracts, 25, no. 1, 2639-2643, (2006)

76. Zhang, H., Weglein, A.B., The inverse scattering series for tasks associated with primaries: direct non-linear inversion of 1D elastic media. SEG Expanded Abstracts, 25, no. 1, 2062-2066, (2006)

77. Ramirez, A.C., Weglein, A.B., Hokstad, K., Near offset data extrapolation. SEG Expanded Abstracts, 25, no. 1, 2554-2558, (2006)

78. Weglein, A.B., Amundsen, L., Liu, F., Innanen, K., Nita, B., Zhang, J., Ramirez, A., Otnes, E. Inverse scattering subseries direct removal of multiples and depth imaging and inversion of primaries with subsurface information: Strategy and recent advances. SEG Expanded Abstracts, 26, no. 1, 2456-2460, (2007)

79. Ramirez, A.C., Weglein, A.B., Otnes, E., Hokstad, K., The role of the direct wave and Green's theorem in seismic interferometry and spurious multiples. SEG Expanded Abstracts, 26, no. 1, 2471-2475, (2007)

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81. Zhang, J., Liu, F., Innanen, K., Weglein, A.B., Comprehending and analyzing the leading order and higher order imaging closed forms derived from inverse scattering series. SEG Expanded Abstracts, 26, no. 1, 2335-2338, (2007)

82. Lira, J.E., Innanen, K.A., Weglein, A.B., Ramirez, A.C., Estimating plane-wave transmission loss with the inverse-scattering internal multiple-attenuation algorithm: Concept and an application to Q estimation. SEG Expanded Abstracts, 26, no. 1, 2466-2470, (2007)

83. Nita, B.G., Weglein, A.B., Inverse-scattering internal multiple-attenuation algorithm: An analysis of the pseudo-depth and time-monotonicity requirements. SEG Expanded Abstracts, 26, no. 1, 2461-2465, (2007)

84. Weglein, A.B., Ramirez, A.C., Innanen, K.A., Liu, F., Lira, J.E., Jiang, S. the underlying unity of distinct processing algorithms for: (1) the removal of free surface and internal multiples, (2) Q compensation (without Q), (3) depth imaging, and (4) nonlinear AVO, that derive from the inverse scattering series. SEG Expanded Abstracts, 27, no. 1, 2481-2486, (2008)

85. Ramirez, A.C., Weglein, A.B., Deriving, explicating, and extending interferometric methods using Green's theorem. SEG Expanded Abstracts, 27, no. 1, 2917-2921, (2008)

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86. Ramirez, A.C., Weglein, A.B., Inverse scattering internal multiple elimination: Leading-order and higher-order closed forms. SEG Expanded Abstracts, 27, no. 1, 2471-2475, (2008)

87. Weglein, A.B., A new, clear and meaningful definition of linear inversion: Implications for seismic inversion of primaries and removing multiples. SEG Expanded Abstracts, 28, no. 1, 3059-3063, (2009)

88. Weglein, A.B., Zhang, H., Ramirez, A.C., Liu, F., Lira, J.E., Clarifying the underlying and fundamental meaning of the approximate linear inversion of seismic data. Geophysics, vol. 74., no. 6 (November-December 2009)

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90. Zhang, H., Weglein, A.B., Direct nonlinear inversion of multiparameter 1D elastic media using the inverse scattering series. Geophysics, vol. 74., no. 6 (November-December 2009)

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93. Weglein, A.B., Liu, F., Wang, Z., Li, X., Liang, H., The inverse scattering series depth imaging algorithms: development, tests and progress towards field data application. SEG Expanded Abstracts, 29, no. 1, 4133-4138, (2010)

94. Mayhan, J.D., Terenghi, P., Weglein, A.B., Chemingui, N., Green's theorem derived methods for preprocessing seismic data when the pressure P and its normal derivative are measured. SEG Expanded Abstracts, 30, no. 1, 2722-2726, (2011)

95. Weglein, A.B., Hsu, S.-Y., Terenghi, P., Li, X., Stolt, R.H., "Multiple attenuation: Recent advances and the road ahead (2011)" The Leading Edge, August 2011, p. 864-875.

96. Terenghi, P., Hsu, S.-Y., Weglein, A.B., Li, X., "Exemplifying the specific properties of the inverse scattering series internal-multiple attenuation method that reside behind its capability for complex onshore and marine multiples" The Leading Edge, August 2011, p. 876-882.

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98. Weglein, A.B., Stolt, R. H., Mayhan, J. D., "*Reverse-time migration and Green's theorem: Part I --- The evolution of concepts, and setting the stage for the new {RTM} method*" *Journal of Seismic Exploration*, 20, 73–90. February 2011
99. Weglein, A.B., Stolt, R. H., Mayhan, J. D., "*Reverse time migration and Green's theorem: Part II --- A new and consistent theory that progresses and corrects current RTM concepts and methods*" *Journal of Seismic Exploration*, 20, 135–159. May 2011
100. Weglein, A.B., Liu, F., Li, X., Terenghi, P., Kragh, E., Mayhan, J.D., Wang, Z., Mispel, J., Amundsen, L., Liang, H., Tang, L., Hsu, S.-Y., "*Inverse scattering series direct depth imaging without the velocity model: First field data examples*" *Journal of Seismic Exploration*, 21, 1-28, March 2012
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105. Weglein, A. B., "*Multiple attenuation: strategy that addresses current challenges*" *E&P Magazine*, 87, 132-135, April 2014.
106. Weglein, A. B., "*Removing multiples without subsurface data*" *E&P Magazine*, 87, 154-156, May 2014.

Arthur B. Weglein

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107. Weglein, A. B., "*Multiples: Signal or noise?*" 84th Annual International Meeting, SEG, Expanded Abstracts, 4393-4399, 2014.
108. Weglein, A. B., "*Primaries - The only events that can be migrated and for which migration has meaning*" *The Leading Edge*, 34, 808-813, July 2015.
109. Weglein, A. B., "*Multiples: signal or noise?*" *Geophysics*, vol. 81, no. 4, (2016).
110. Wu, J., Weglein, A. B., "*Preprocessing in displacement space for on-shore seismic processing: removing ground roll and ghosts without damaging the reflection data*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4626-4630, 2015.
111. Wu, J., Weglein, A. B., "*Preprocessing in the PS space for on-shore seismic processing: removing ground roll and ghosts without damaging the reflection data*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4740-4744, 2015.
112. Yang, J., Weglein, A. B., "*Accommodating the source wavelet and radiation pattern in the internal multiple attenuation algorithm: Theory and initial example that demonstrates impact*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4396-4401, 2015.
113. Lin, X., Weglein, A. B., "*The significance of incorporating a 3-D point source in the inverse scattering series internal multiple attenuator for a 1-D subsurface*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4391-4395, 2015.
114. Ma, C., Weglein, A. B., "*A new Inverse Scattering Series (ISS) internal-multiple-attenuation algorithm that predicts the accurate time and approximate amplitude of the first-order internal multiples and addresses spurious events: Analysis and Tests in 2D*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4402-4407, 2015.
115. Zou, Y., Weglein, A. B., "*An internal-multiple elimination algorithm for all first-order internal multiples for a 1D earth*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4408-4412, 2015.
116. Weglein, A. B., "*Multiples can be useful (at times) to enhance imaging, by providing an approximate image of an unrecorded primary, but it's always primaries that are migrated or imaged*" 85th Annual International Meeting, SEG, Expanded Abstracts, 4033-4038, 2015.
117. Weglein, A. B., "*A direct inverse solution for AVO/FWI parameter estimation objectives*" 85th Annual International Meeting, SEG, Expanded Abstracts, 3367-3370, 2015.
118. Yang, J., Weglein, A. B., "*A first comparison of the inverse scattering series non-linear inversion and the iterative linear inversion for parameter estimation*" 85th Annual International Meeting, SEG, Expanded Abstracts, 1263-1267, 2015.

Arthur B. Weglein

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119. Weglein, A. B., *“Multiple removal: open issues, pressing challenges and recent progress towards providing the next and higher level of required capability”* 85th Annual International Meeting, SEG, Expanded Abstracts, 4555-4562, 2015.

120. Fu, Q., Weglein, A., Liu, F., Morton, S., King, M. *“A cost-effective scheme for reverse time migration angle gathers”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4383-4387, 2016.

121. Lin, X., Weglein, A. *“Incorporating a 3D point source in the ISS FSME for a 1D subsurface and its influence on the subsequent processing”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4602-4606, 2016.

122. Lin, X., Weglein, A. *“The significance and impact of incorporating a 3D point source in Green's theorem deghosting”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4766-4771, 2016.

123. Ma, C., Weglein, A. *“Examining the interdependence and cooperation of the terms in the distinct inverse-scattering subseries for free-surface multiple and internal multiple removal”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4561-4565, 2016.

124. Ma, C., Weglein, A. *“A clear example of using multiples to enhance and improve imaging”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4592-4595, 2016.

125. Weglein, A., Mayhan, J., Zou, Y., Fu, Q., Liu, F., Wu, J., Ma, C., Lin, X., Stolt, R. *“The first migration method that is equally effective for all acquired frequencies for imaging and inverting at the target and reservoir”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4266-4272, 2016.

126. Weglein, A. B. *“A direct inverse method for subsurface properties: the conceptual and practical benefit and added-value in comparison with all current indirect methods, for example, amplitude-variation-with-offset and full-waveform inversion”* Interpretation, vol. 5, SL89-SL107, 2017.

127. Wu, J., Weglein, A. *“Green's theorem-based onshore preprocessing: A reduced data requirement assuming a vacuum/earth model for the air/earth interface and the evaluation of the usefulness of that assumption”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4685-4689, 2016.

128. Wu, J., Weglein, A. *“Predicting deghosted reflection data for both pressure and multicomponent displacements at the ocean bottom”* 86th Annual International Meeting, SEG, Expanded Abstracts, 4751-4755, 2016.

Arthur B. Weglein

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129. Yang, J., Weglein, A. “*The impact of prerequisites (ghosts, source wavelet, and radiation pattern) on the inverse scattering series free-surface multiple-elimination algorithm*” 86th Annual International Meeting, SEG, Expanded Abstracts, 4596-4601, 2016.
130. Zhang, Z., Weglein, A. “*2D Green's theorem receiver deghosting in the (x-omega) domain using a depth-variable cable towards on-shore and ocean-bottom application with variable topography*” 86th Annual International Meeting, SEG, Expanded Abstracts, 4735-4740, 2016.
131. Zou, Y., Ma, C., Weglein, A. “*The first inverse-scattering-series internal multiple elimination method for a multidimensional subsurface*” 86th Annual International Meeting, SEG, Expanded Abstracts, 4550-4554, 2016.
132. Shen, Y., Weglein, A. “*Impact of the shape of the acquisition surface on the effectiveness of the ISS internal multiple attenuation and elimination algorithms: Analyzing the problem and providing a response to the challenge*” 87th Annual International Meeting, SEG, Expanded Abstracts, 4803-4807, 2017.
133. Zhang, Z., Weglein, A. “*3D source and receiver deghosting in the space-frequency domain using a depth-variable measurement surface: An initial offshore synthetic data study with anticipated onshore and ocean-bottom application*” 87th Annual International Meeting, SEG, Expanded Abstracts, 4865-4870, 2017.
134. Wu, J., Weglein, A. “*A new method for deghosting data collected on a depth-variable acquisition surface by combining Green's theorem wave separation followed by a Stolt extended Claerbout III wave prediction for one-way propagating waves*” 87th Annual International Meeting, SEG, Expanded Abstracts, 4859-4864, 2017.
135. Zou, Y., Weglein, A. “*A wedge resolution comparison between RTM and the first migration method that is equally effective at all frequencies at the target: Tests and analysis with both conventional and broadband data*” 87th Annual International Meeting, SEG, Expanded Abstracts, 4468-4472, 2017.
136. Bui, H., Weglein, A., Kumar, S., Singleton, S., Cataldo, O. D., Yenugu, M., Chakraborty, S., Meza, S., “*Introduction to special section: Seismic inversion — Conventional seismic impedance inversion and advanced seismic inversion techniques: Developments, workflow, and case studies*” vol. 5, SLi-SLii, 2017.
137. Zou, Y., Weglein, A. B., “*ISS Q compensation without knowing, estimating or determining Q and without using or needing low and zero frequency data*” Journal of Seismic Exploration, 27, 593-608, December 2018
138. Weglein, A. B., “*Direct and indirect inversion and a new and comprehensive perspective on the role of primaries and multiples in seismic data processing for structure determination and amplitude analysis*” Ciencia Tecnología y Futuro, Submitted

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Invited Presentations

1. American Physical Society: Physics in the Petroleum Industry Conference, Lakeway, TX, ??.
2. Cambridge University, Department of Applied Mathematics and Theoretical Physics, 1993.
3. **Key-note Address:** Industrial Associates Meeting, Bullard Lab., Cambridge University, UK, 1993.
4. University of Utrecht, 1995.
5. Delft University, 1995.
6. Colorado School of Mines, 1996.
7. Tulsa Geophysical Society, 1996.
8. Tel Aviv University, Gordon Center for Energy Studies, Annual Invited Lecture Series, under auspices of Stackler Institute, 1997.
9. Geophysical Institute of Israel, Rehovot, Israel, 1997.
10. Stanford University, Math and Geophysics Departments, 1998.
11. Houston Geophysical Society, 1998.
12. Weglein, A.B., S.A. Shaw, K.H. Matson, and D.J. Foster “An inverse scattering subseries for predicting the correct location of reflectors: Initial analysis, testing and evaluation” 6th Annual Meeting of Consortium for the Development of Specialized Seismic Techniques (CDSST), University of British Columbia, Vancouver, Canada, 2002.
13. Weglein, A.B. and S.A. Shaw, “Inverse scattering subseries for imaging at the correct depth without the correct velocity”, Fourth IEEE International Symposium on Computer Aided Seismic Analysis and Discrimination, Westborough, MA, 2002.
14. Testimony of Arthur B. Weglein, “The New Ultra-deepwater and Unconventional Onshore Natural Gas and Oil R&D Program – Opportunities to Increase Domestic Natural Gas and Oil Production”, U.S. House of Representatives’ Committee on Science, Subcommittee of Energy, 2003.

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15. Testimony of Arthur B. Weglein, "Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Supply R&D Program of H.R.6", US House of Representatives' Committee of Energy and Commerce, Subcommittee of Energy and Air Quality, 2004.
16. **Key-note Address:** EAGE Subsalt Imaging Workshop, Cairo, Egypt, 2009.
17. **Key-note Address:** SEG Subsalt Imaging Workshop, Lake Tahoe, California, 2010.
18. **Key-note Address:** Deep Offshore Technology Conference, Houston, Texas, 2010.
19. Multiple Attenuation: Recent Advances and the Road Ahead (2011), given at the SEG Convention special session on Recent Advances and the Road Ahead, San Antonio, Texas, 2011.
20. Multiple Attenuation: Recent Advances and the Road Ahead (2013), given at the SEG Convention special session on Recent Advances and the Road Ahead, Houston, Texas, 2013.
21. "Multiples: Signal or noise?" Invited presentation given at the SEG Convention special session on Recent Advances and the Road Ahead, Denver, Colorado, 2014.
22. Weglein, A. B., K. Innanen, and J. E. Lira, "*Achieving processing objectives in an elastic or anelastic earth, without subsurface information*" Presentation given at the SEG Workshop W-15 Seismic Attenuation and Scattering, Denver, Colorado, 2014.
23. Weglein, A. B., F. Liu, and Z. Wang, "*ISS direct depth imaging without knowing or needing a velocity model or other subsurface information*" Presentation given at the SEG Workshop W-18 New Advances in Migration, Denver, Colorado, 2014.
24. Multiples: Signal or noise?, given at the SEG Convention special session on Recent Advances and the Road Ahead, Denver, Colorado, 2014.
25. Arthur B. Weglein, "*Seismic multiples- are they signal or noise?*" Key-note address at the SEG/Kuwait Oil Company (KOC) Workshop, Kuwait City, Kuwait, 2014. Video available at <http://mosrp.uh.edu/content/07-news/a-b-weglein-nov-2014-m-osrp-executive-summary-and-2-video-for-kuwait-oil-company-seg-workshop-december-1-3-2014/DrWegleinKuwait.mp4>
26. Arthur B. Weglein, "*Direct inversion*" Invited key-note address at the SEG Workshop on FWI, Abu Dhabi, UAE, 2015. Video available at <http://mosrp.uh.edu/news/mar-30-apr-1-fwi-workshop-abu-dhabi>
27. Arthur B. Weglein, Invited Presentation at Petrobras Workshop on Game Changing Seismic Technology, 2016. Video available at <http://mosrp.uh.edu/news/invited-presentation-petrobras-workshop-aug-2016>

Arthur B. Weglein

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28. Jing Wu and Arthur B. Weglein, “Recent Advances in Separating the Reference Wave and Preserving Reflection Data, and for Deghosting, for Towed Streamer, On-shore and Ocean Bottom Acquisition: Implications for Multiple Removal, Structural Determination and Amplitude Analysis” Presentation given at the Geophysical Society of Houston, 2017.

29. Inverse scattering series internal multiple attenuation for prestack land data, International Geophysical Conference, Qingdao, China, 2017.

30. Arthur B. Weglein, Invited Presentation to Ecopetrol (the national oil company of Colombia), 2019. Video available at <https://drive.google.com/file/d/13Nv0MDJKDjxPYsQdBQ95stC3Z7Qwcjxs/view?usp=sharing>

Arthur B. Weglein, background and supplementary videos that complement the presentation in the link above for Ecopetrol:

--- 2018 M-OSRP Annual Technical Review Video and Synced Slides. Video available at <http://mosrp.uh.edu/news/annual-meeting-2018>

--- Executive Summary – a single accessible derivation of all M-OSRP ISS and Green’s theorem methods. <http://mosrp.uh.edu/news/executive-summary-progress-2017>

--- ISS Direct Depth Imaging without knowing, estimating or determining a velocity Model. <http://mosrp.uh.edu/news/invited-presentation-petrobras-workshop-aug-2016>

--- ISS Direct Estimation of Subsurface Earth Mechanical Properties. Video available at [Key-note address, Abu Dhabi, March 31st , 2015 presented at the SEG FWI, Workshop Filling the gaps in Abu-Dhabi](http://www.seg.org/SEGFWI/Workshop/Filling%20the%20gaps%20in%20Abu%20Dhabi/Key-note%20address%20Abu%20Dhabi%20March%2031st%202015)

--- Advances in the physics of imaging for enhanced illumination and resolution with benefit for petroleum exploration. <http://www.uh.edu/nsm/physics/news-events/stories/2018/0525-seismic-processing.php>

--- <http://mosrp.uh.edu/news/recent-preprints-from-m-osrp-uh-weglein-2018>

--- Advances in the physics of imaging with benefit for petroleum exploration and medical imaging <http://www.uh.edu/nsm/physics/news-events/stories/2018/0525-seismic-processing.php>

--- <http://mosrp.uh.edu/news/annual-meeting-2018>

--- <http://www.uh.edu/nsm/news-events/stories/2017/1201-weglein-editor.php>

--- <http://mosrp.uh.edu/news/executive-summary-progress-2017>

--- <http://mosrp.uh.edu/news/business-drivers-roi-deliverables-ep-impact-2017>

--- <http://arthurbenjaminweglein.com>

--- <http://mosrp.uh.edu/news/awards-recognition-201612>

--- http://www.uh.edu/nsm/newsevents/stories/2008/0711_weglein.php

--- <http://mosrp.uh.edu/news/invited-presentation-petrobras-workshop-aug-2016>

--- [Key-note address, Abu Dhabi, March 31st , 2015 presented at the SEG FWI, Workshop Filling the gaps in Abu-Dhabi](http://www.seg.org/SEGFWI/Workshop/Filling%20the%20gaps%20in%20Abu%20Dhabi/Key-note%20address%20Abu%20Dhabi%20March%2031st%202015)

--- <http://mosrp.uh.edu/news/m-osrp-strategy-and-plan-for-continued-high-impact-seismic-development-and-delivery-11-27-18>

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31. A new perspective on removing and using multiples: They have the same exact goal, imaging primaries: Recent advances in multiple removal, invited keynote address given at the Kuwait Oil Company/SEG Workshop, Seismic Multiples - the Challenges and the Way Forward, Kuwait City, Kuwait, December 3-5, 2019. Video available at <http://mosrp.uh.edu/news/extended-version-weglein-key-note-2019-seg-koc-workshop>

Funded External Grants

1. Principle Investigator for M-OSRP. Various Private Agencies, \$2,691,238.71, 01/01/2002-01/31/2011.
2. Principle Investigator for Collaborative Research CMG. NSF, \$29,116.20, 01/01/2004-12/31/2007.
3. Principle Investigator for Collaborative Research CMG. NSF, \$334,629.25, 09/01/2004-12/31/2008.
4. Principle Investigator for Seismic Imaging Beneath an Unknow Overburden. DOE, \$10,450.31, 09/01/2005-8/31/2009.
5. Principle Investigator for Seismic Imaging Beneath an Unknow Overburden. DOE, \$134,784.82, 09/01/2005-12/31/2009.
6. Principle Investigator for M-OSRP. Various Private Agencies, \$3,024,240.39, 01/01/2007-06/30/2013.
7. Principle Investigator for M-OSRP. Various Private Agencies, \$4,168,363.03, 01/01/2013-12/31/2020.

Postdocs, Graduate and Undergraduate Students Supervised

In the list below please find alums from M-OSRP

Ph.D. Thesis advisor for R. G. Keys (1983) (1984),
University of Tulsa, Tulsa, Oklahoma.

Ph.D. Thesis advisor for C. Y. Lui (1984),
University of Tulsa, Tulsa, Oklahoma.

M.S. advisor for F. A. DaSilva (1991),
Federal University of Bahia, Salvador, Brazil.

M.S. advisor for G. R. Lima (1991),
Federal University of Bahia, Salvador, Brazil.

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Ph.D. Thesis advisor for P. M. Carvalho (1992),
Federal University of Bahia, Salvador, Brazil.

Ph.D. Thesis advisor for F. Araujo Gasparotto (1994),
Federal University of Bahia, Salvador, Brazil,
J. Clarence Karcher Award winner (2000),
currently at EOG resources.

Ph.D. Thesis advisor for K. H. Matson (1997),
University of British Columbia, Vancouver, B.C.,
J. Clarence Karcher Award winner (1999).

Ph.D. Thesis Advisor for Z. Guo, Geophysics (2004),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for F. Miranda, Physics (2004),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Simon Shaw, Geophysics (2005),
University of Houston, Houston, Texas,
J. Clarence Karcher Award winner (2005).

Ph.D. Thesis Advisor for Fang Liu, Physics (2006),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for H. Zhang, Physics (2006),
University of Houston, Houston, Texas,
J. Clarence Karcher Award winner (2009).

Ph.D. Thesis Advisor for A. Ramirez, Physics (2007),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for J. Zhang, Physics (2007),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for J. Lira, Geophysics (2009),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Shih-Ying Hsu, Physics (2011),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Xu Li, Physics (2011),
University of Houston, Houston, Texas.

M.S. advisor for Andre Schuwartz Ferreira (2011),
University of Houston, Houston, Texas.

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Ph.D. Thesis Advisor for Mozhddeh Niazmand, Physics (2012),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Zhiqiang Wang, Physics (2012),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Hong Liang, Physics (2013),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for James D. Mayhan, Physics (2013),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Lin Tang, Physics (2014),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Jinlong Yang, Physics (2014),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Shansong Jiang, Physics (2016),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Chao Ma, Physics (2016),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Yuchang Shen, Physics (2017),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Zhen Zhang, Physics (2017),
University of Houston, Houston, Texas.

Ph.D. Thesis Advisor for Yanglei Zou, Physics (2017),
University of Houston, Houston, Texas.

Service

Taught in the University of Houston-Rice University Outreach program with Director,
Dr. Robert Dubois.

Member UH Physics Graduate Committee, 2005-2007

Member UH Physics Department Personnel Committee, 2007-present