

FDPSV

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1 Introduction

References

- Aki, K. and Richards, P. G. (2002). *Quantitative seismology*, volume 1.
- Angona, F. A. (1960). Two-dimensional modeling and its application to seismic problems. *Geophysics*, 25(2):468–482.
- Auer, L., Nuber, A. M., Greenhalgh, S. A., Maurer, H., and Marelli, S. (2013). A critical appraisal of asymptotic 3D-to-2D data transformation in full-waveform seismic crosshole tomography. *Geophysics*, 78(6):R235–R247.
- Ben-Hadj-Ali, H., Operto, S., and Virieux, J. (2008). Velocity model building by 3D frequency-domain, full-waveform inversion of wide-aperture seismic data. *Geophysics*, 73(5):VE101–VE117.
- Berkhout, A., Verschuur, D., and Blacquiere, G. (2012). Illumination properties and imaging promises of blended, multiple-scattering seismic data: a tutorial. *Geophysical Prospecting*, 60:713–732.
- Bishop, T., Bube, K., Cutler, R., Langan, R., Love, P., Resnick, J., Shuey, R., and Spinder, D. (1985). Tomographic determination of velocity and depth in laterally varying media. *Geophysics*, 50:903–923.
- Bodet, L., van Wijk, K., Bitri, A., Abraham, O., Cote, P., Grandjean, G., and Leparoux, D. (2005). Surface-wave inversion limitations from laser-doppler physical modeling. *J. Environ. Eng. Geophys.*, 10:151–162.
- Bohm, G., Carcione, J. M., Gei, D., Picotti, S., and Michelini, A. (2015). Cross-well seismic and electromagnetic tomography for CO₂ detection and monitoring in a saline aquifer. *Journal of Petroleum Science and Engineering*, 133:245–257.
- Borisov, D. and Singh, S. C. (2015). Three-dimensional elastic full waveform inversion in a marine environment using multicomponent ocean-bottom cables: a synthetic study. *Geophysical Journal International*, 201(3):1215–1234.
- Borisov, D., Singh, S. C., et al. (2013). An efficient 3D elastic full waveform inversion of time-lapse seismic data using grid injection method. In *2013 SEG Annual Meeting*. Society of Exploration Geophysicists.
- Brenguier, F., Shapiro, N., Campillo, M., Ferrazzini, V., Duputel, Z., Coutant, O., and Nercessian, A. (2008). Toward forecasting volcanic eruptions using seismic noise. *Nature Geoscience*, 1:126–130.
- Bretaudeau, F., Brossier, R., Leparoux, D., Abraham, O., and Virieux, J. (2013). 2D elastic full-waveform imaging of the near-surface: application to synthetic and physical modelling data sets. *Near Surface Geophysics*.
- Bretaudeau, F., Leparoux, D., and Abraham, O. (2008). Small scale adaptation of the seismic full waveform inversion method - application to civil engineering applications. *The Journal of the Acoustical Society of America*, 123(5).
- Bretaudeau, F., Leparoux, D., Durand, O., and Abraham, O. (2011). Small-scale modeling of onshore seismic experiment: A tool to validate numerical modeling and seismic imaging methods. *Geophysics*, 76(5):T101–T112.
- Brossier, R., Etienne, V., Hu, G., Operto, S., and Virieux, J. (2013). Performances of 3D frequency-domain full-waveform inversion based on frequency-domain direct-solver and time-domain modeling: application to 3D obc data from the valhall field. In *IPTC 2013: International Petroleum Technology Conference*.
- Brossier, R., Operto, S., Virieux, J., et al. (2009). Two-dimensional seismic imaging of the valhall model from synthetic obc data by frequency domain elastic full-waveform inversion. In *2009 SEG Annual Meeting*. Society of Exploration Geophysicists.
- Butzer, S., Kurzmann, A., and Bohlen, T. (2013). 3D elastic full-waveform inversion of small-scale heterogeneities in transmission geometry. *Geophysical Prospecting*, 61(6):1238–1251.
- Castellanos, C., Etienne, V., Hu, G., Operto, S., Brossier, R., Virieux, J., et al. (2011). Algorithmic and methodological developments towards full waveform inversion in 3D elastic media. In *2011 SEG Annual Meeting*. Society of Exploration Geophysicists.
- Crase, E., Pica, A., Noble, M., McDonald, J., and Tarantola, A. (1990). Robust elastic nonlinear waveform inversion: Application to real data. *Geophysics*, 55(5):527–538.
- Cristini, P. and Komatitsch, D. (2012). Some illustrative examples of the use of the spectral-element method in ocean acoustics. *Journal of the Acoustical Society of America*.
- De Cacqueray, B., Roux, P., Campillo, M., Catheline, S., and Boue, P. (2011). Elastic-wave identification and extraction through array processing: An experimental investigation at the laboratory scale. *Journal of Applied Geophysics*, 74:81–88.

- Dhatt, G. and Touzot, G. (1984). *The Finite Element Method, Displayed*. John Wiley & Sons.
- Etienne, V., Operto, S., Virieux, J., Jia, Y., et al. (2010). Computational issues and strategies related to full waveform inversion in 3D elastic media: Methodological developments. In *2010 SEG Annual Meeting*. Society of Exploration Geophysicists.
- Favretto-Cristini, N., Tantsereva, A., Cristini, P., Ursin, B., Komatitsch, D., and Aizenberg, A. (2013). Numerical modeling of zero-offset laboratory data in a strong topographic environment: results for a spectral-element method and a discretized Kirchhoff integral method. *Earthquake Science*.
- Festa, G. and Vilotte, J. (2005). The Newmark as velocity-stress time-staggering: an efficient PML implementation for spectral element ssimulation of elastodynamics. *Geophysical Journal International*, 161:798–812.
- Forbriger, T., Gross, L., and Schafer, M. (2014). Line-source simulation for shallow-seismic data. part 1: theoretical background. *Geophysical Journal International*, 198(3):1387–1404.
- French, W. S. (1974). Two-dimensional and three-dimensional migration of model-experiment reflection profiles. *Geophysics*, 39(3):265–277.
- Geuzaine, C. and Remacle, J. (2009). Gmsh: a three-dimensional finite element mesh generator with built-in pre- and post-processing facilities. *International Journal for Numerical Methods in Engineering*, 79(11):1309–1331.
- Groos, L., Schäfer, M., Forbriger, T., and Bohlen, T. (2014). The role of attenuation in 2D full-waveform inversion of shallow-seismic body and rayleigh waves. *Geophysics*, 79(6):R247–R261.
- Guofeng, L., Yaning, L., Li, R., and Xiaohong, M. (2013). 3D seismic reverse time migration on gpgpu. *Computers & Geosciences*, 59:10–23.
- Hilterman, F. (1970). Three-dimensional seismic modeling. *Geophysics*, 35:1020–1037.
- Howes, E., Tejada-Flores, L., and Randolph, L. (1953). Seismic model study. *Journal of the Acoustical Society of America*, 25:915–921.
- Hulbert, G. M. and Hughes, T. J. (1990). Space-time finite element methods for second-order hyperbolic equations. *Computer Methods in Applied Mechanics and Engineering*, 84(3):327–348.
- Komatitsch, D., Martin, R., Tromp, J., Taylor, M. A., and Wingate, B. A. (2001). Wave propagation in 2D elastic media using a spectral element method with triangles and quadrangles. *Journal of Computational Acoustics*, 9(02):703–718.
- Komatitsch, D. and Tromp, J. (1999). Introduction to the spectral-element method for three-dimensional seismic wave propagation. *Geophysical Journal International*, 139(3):806–822.
- Komatitsch, D., Tsuboi, S., and Tromp, J. (2005). The spectral-element method in seismology. *Seismic Earth: Array Analysis of Broadband Seismograms*, pages 205–227.
- Komatitsch, D. and Vilotte, J.-P. (1998). The spectral element method: an efficient tool to simulate the seismic response of 2D and 3D geological structures. *Bulletin of the seismological society of America*, 88(2):368–392.
- Komatitsch, D., Vilotte, J.-P., Vai, R., Castillo-Covarrubias, J. M., and Sanchez-Sesma, F. J. (1999). The spectral element method for elastic wave equations-application to 2-d and 3D seismic problems. *International Journal for numerical methods in engineering*, 45(9):1139–1164.
- Lysmer, J. and Drake, L. A. (1972). A finite element method for seismology. *Methods in computational physics*, 11:181–216.
- Martin, G. S., Wiley, R., and Marfurt, K. J. (2006). Marmousi2: An elastic upgrade for marmousi. *The Leading Edge*, 25(2):156–166.
- Mo, Y., Greenhalgh, S. A., Robertsson, J. O., and Karaman, H. (2015). The development and testing of a 2d laboratory seismic modelling system for heterogeneous structure investigations. *Journal of Applied Geophysics*, 116:224–235.
- Moczó, P., Kristek, J., Galis, M., Chaljub, E., and Etienne, V. (2011). 3D finite-difference, fine-element, discontinuous galerkin and spectral-element schemes for their accuracy with respect to p-wave to s-wave speed ratio. *Geophysical Journal International*.
- Morozov, I. (2004). Crustal scattering and some artefacts in receiver function images. *Bulletin of the Seismological Society of America*, 94:1492–1499.
- O’Brien, P. and Symes, M. (1971). Model seismology. *Reports on Progress in Physics*, 34(2):697.
- Oliver, J., Press, F., and Ewing, M. (1954). Two-dimensional model seismology. *Geophysics*, 19(2):202–219.

- Park, C. B., Miller, R. D., Xia, J., and Ivanov, J. (2007). Multichannel analysis of surface waves (masw) – active and passive methods. *The Leading Edge*.
- Perez Solano, C., Donno, D., and Chauris, H. (2014). Alternative waveform inversion for surface wave analysis in 2D media. *Geophysical Journal International*, 198:1359–1372.
- Plessix, R.-E., Baeten, G., de Maag, J. W., Klaassen, M., Rujie, Z., Zhifei, T., et al. (2010). Application of acoustic full waveform inversion to a low-frequency large-offset land data set. In *2010 SEG Annual Meeting*. Society of Exploration Geophysicists.
- Pratt, R. G. (1999). Seismic waveform inversion in the frequency domain, Part 1: Theory and verification in a physical scale model. *Geophysics*, 64(3):888–901.
- Ravaut, C., Operto, S., Imbrota, L., Virieux, J., Herrero, A., and Dell’Aversana, P. (2004). Multiscale imaging of complex structures from multifold wide-aperture seismic data by frequency-domain full-waveform tomography: Application to a thrust belt. *Geophysical Journal International*, 159(3):1032–1056.
- Rieber, F. (1936). Visual presentation of elastic wave patterns under various structural conditions. *Geophysics*, 1:196–218.
- Romdhane, A., Grandjean, G., Brossier, R., Rejiba, F., Operto, S., and Virieux, J. (2011). Shallow-structure characterization by 2D elastic full-waveform inversion. *Geophysics*, 76(3):R81–R93.
- Schafer, M., Gross, L., Forbriger, T., and Bohlen, T. (2014). Line-source simulation for shallow-seismic data. part2: full-waveform inversion – a synthetic 2-d case study. *Geophysical Journal International*, 198:1405–1418.
- Seron, F. J., Sanz, F. J., Kindelan, M., and Badal, J. I. (1990). Finite-element method for elastic wave propagation. *Communications in applied numerical methods*, 6:359–368.
- Shipp, R. M. and Singh, S. C. (2002). Two-dimensional full wavefield inversion of wide-aperture marine seismic streamer data. *Geophysical Journal International*, 151(2):325–344.
- Tromp, J., Komatitsch, D., and Liu, Q. (2008). Spectral-element and adjoint methods in seismology. *Commun Comput Phys*.
- Valensi, R., Leparoux, D., Durand, O., Bretaudeau, F., and Côte, P. (2015). Multicomponent reduced scale seismic modelling: upgrade of the musc laboratory with application to polarization observations. *Geophysical Journal International*, 202(3):1993–2024.
- Van Wijk, K. (2005). On estimating the impulse response between receivers in a controlled ultrasonic experiment. geophysics. *Geophysics*, 71:SI79–SI84.
- Virieux, J. and Operto, S. (2009). An overview of full-waveform inversion in exploration geophysics. *Geophysics*, 74(6):WCC1–WCC26.
- Wang, Y. and Rao, Y. (2009). Reflection seismic waveform tomography. *Journal of Geophysical Research: Solid Earth*, 114(B3).
- Wathelet, M. (2005). *Array record of ambient vibrations: surface-wave inversion*. PhD thesis, Université de Liège, Faculté des Sciences Appliquées.
- Wong, J., Hall, K. W., Gallant, E. V., Maier, R., Bertram, M., and Lawton, D. C. (2009). Seismic physical modeling at university of calgary. *CSEG recorder*, 34(3).