

Ji, Xia; Liu, Xiaodong

Source reconstruction with multifrequency sparse scattered fields. (English) Zbl 1478.35160
SIAM J. Appl. Math. 81, No. 6, 2387-2404 (2021).

MSC:

- 35P25 Scattering theory for PDEs
- 35R30 Inverse problems for PDEs
- 45Q05 Inverse problems for integral equations
- 78A46 Inverse problems (including inverse scattering) in optics and electromagnetic theory
- 74B05 Classical linear elasticity

Keywords:

multipolar point sources; multifrequency scattered fields; sparse data; sampling method

Full Text: [DOI](#)

References:

- [1] A. Alzaalig, G. Hu, X. Liu, and J. Sun, Fast acoustic source imaging using multi-frequency sparse data, *Inverse Problems*, 36 (2020), 025009. · [Zbl 1448.35566](#)
- [2] G. Bao, P. Li, J. Lin, and F. Triki, Inverse scattering problems with multifrequencies, *Inverse Problems*, 31 (2015), 093001.
- [3] G. Bao, J. Lin, and F. Triki, A multi-frequency inverse source problem, *J. Differential Equations*, 249 (2010), pp. 3443-3465. · [Zbl 1205.35336](#)
- [4] G. Bao, J. Lin, and F. Triki, Numerical solution of the inverse source problem for the Helmholtz equation with multiple frequency data, in *Mathematical and Statistical Methods for Imaging*, *Contemp. Math.* 548, AMS, Providence, RI, 2011, pp. 45-60. · [Zbl 1229.35319](#)
- [5] G. Bao, S. Lu, W. Rundell, and B. Xu, A recursive algorithm for multifrequency acoustic inverse source problems, *SIAM J. Numer. Anal.*, 53 (2015), pp. 1608-1628, <https://doi.org/10.1137/140993648>. · [Zbl 1321.65166](#)
- [6] N. Bleistein and J. Cohen, Nonuniqueness in the inverse source problem in acoustics and electromagnetics, *J. Math. Phys.*, 18 (1977), pp. 194-201. · [Zbl 0379.76076](#)
- [7] S. Bousba, Y. Guo, X. Wang, and L. Li, Identifying multipolar acoustic sources by the direct sampling method, *Appl. Anal.*, 99 (2020), pp. 856-879. · [Zbl 1437.65170](#)
- [8] J. Cheng, V. Isakov, and S. Lu, Increasing stability in the inverse source problem with many frequencies, *J. Differential Equations*, 260 (2016), pp. 4786-4804. · [Zbl 1401.35339](#)
- [9] A. Devaney, E. Marengo, and M. Li, Inverse source problem in nonhomogeneous background media, *SIAM J. Appl. Math.*, 67 (2007), pp. 1353-1378, <https://doi.org/10.1137/060658618>. · [Zbl 1130.45011](#)
- [10] A. Devaney and G. Sherman, Nonuniqueness in inverse source and scattering problems, *IEEE Trans. Antennas Propag.*, 30 (1982), pp. 1034-1037. · [Zbl 0947.78542](#)
- [11] A. El-Badia and T. Nara, An inverse source problem for Helmholtz's equation from the Cauchy data with a single wave number, *Inverse Problems*, 27 (2011), 105001. · [Zbl 1231.35299](#)
- [12] M. Eller and N. Valdivia, Acoustic source identification using multiple frequency information, *Inverse Problems*, 25 (2009), 115005. · [Zbl 1181.35328](#)
- [13] R. Griesmaier and C. Schmiedecke, A multifrequency MUSIC algorithm for locating small inhomogeneities in inverse scattering, *Inverse Problems*, 33 (2017), 035015. · [Zbl 1371.35346](#)
- [14] R. Griesmaier and C. Schmiedecke, A factorization method for multifrequency inverse source problems with sparse far field measurements, *SIAM J. Imaging Sci.*, 10 (2017), pp. 2119-2139, <https://doi.org/10.1137/17M111290X>. · [Zbl 1401.35342](#)
- [15] V. Isakov and S. Lu, Increasing stability in the inverse source problem with attenuation and many frequencies, *SIAM J. Appl. Math.*, 78 (2018), pp. 1-18, <https://doi.org/10.1137/17M1112704>. · [Zbl 1391.35419](#)
- [16] X. Ji, Reconstruction of sources from time domain scattered waves at sparse sensors, *Inverse Problems*, 37 (2021), 065010. · [Zbl 1467.35351](#)
- [17] X. Ji, Reconstruction of multipolar point sources with multi-frequency sparse far field data, *Inverse Problems*, 37 (2021), 065015. · [Zbl 1466.35367](#)
- [18] X. Ji and X. Liu, Inverse elastic scattering problems with phaseless far field data, *Inverse Problems*, 35 (2019), 114004. · [Zbl 1423.35449](#)

- [19] X. Ji and X. Liu, Inverse electromagnetic source scattering problems with multifrequency sparse phased and phaseless far field data, *SIAM J. Sci. Comput.*, 41 (2019), pp. B1368-B1388, <https://doi.org/10.1137/19M1256518>. · [Zbl 1428.35680](#)
- [20] X. Ji and X. Liu, Identification of point-like objects with multifrequency sparse data, *SIAM J. Sci. Comput.*, 42 (2020), pp. A2325-A2343, <https://doi.org/10.1137/20M1312551>.
- [21] Z. Li, Y. Liu, J. Sun, and L. Xu, Quality-Bayesian approach to inverse acoustic source problems with partial data, *SIAM J. Sci. Comput.*, 43 (2021), pp. A1062-A1080, <https://doi.org/10.1137/20M132345X>.
- [22] J. Sylvester and J. Kelly, A scattering support for broadband sparse far field measurements, *Inverse Problems*, 21 (2005), pp. 759-771. · [Zbl 1070.35133](#)
- [23] X. Wang, Y. Guo, D. Zhang, and H. Liu, Fourier method for recovering acoustic sources from multi-frequency far-field data, *Inverse Problems*, 33 (2017), 035001. · [Zbl 1401.35352](#)
- [24] D. Zhang and Y. Guo, Fourier method for solving the multi-frequency inverse source problem for the Helmholtz equation, *Inverse Problems*, 31 (2015), 035007. · [Zbl 1325.35288](#)
- [25] D. Zhang, Y. Guo, J. Li, and H. Liu, Locating multiple multipolar acoustic sources using the direct sampling method, *Commun. Comput. Phys.*, 25 (2019), pp. 1328-1356. · [Zbl 1473.65275](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.