Ivan Graham - List of Publications

The following list of publications is in reverse chronological order. Most papers which are dated after 2004 are also available in electronic form at
http://people.bath.ac.uk/masigg/publications

Journal articles

1. T. Chaumont-Frelet, V. Dolean, M. Fry, I. G. Graham, M Langer, Spectral coarse spaces based on indefinite operators: the Hk-GenEO method, submitted 1st June 2026. https://arxiv.org/abs/2605.31552

2. I.G. Graham and E. A. Spence, Two-level hybrid Schwarz preconditioners with piecewise-polynomial coarse spaces for the high-frequency Helmholtz equation, submitted 26th September 2025. https://arxiv.org/abs/2501.15976

3. I.G. Graham, F.Y. Kuo, D. Nuyens, I. H. Sloan and E. A. Spence, Quasi-Monte Carlo methods for uncertainty quantification of wave propagation and scattering problems modelled by the Helmholtz equation, to appear in IMA Journal of Numerical Analysis
https://arxiv.org/abs/2502.12451

4. J. Galkowski, S. Gong, I.G. Graham, D. Lafontaine, E.A. Spence, Convergence of overlapping domain decomposition methods with PML transmission conditions applied to nontrapping Helmholtz problems, submitted 2 April 2024.
https://arxiv.org/abs/2404.02156

5. S. Downing, S. Gazzola, I.G. Graham and E.A. Spence, Optimisation of seismic imaging via bilevel learning, Inverse Problems 40 115008 (2024).
https://arxiv.org/abs/2301.10762

6. Z. Wu, I.G. Graham, D. Ma, Z. Zhang, A Filon-Clenshaw-Curtis-Smolyak rule for multi-dimensional oscillatory integrals with application to a UQ problem for the Helmholtz equation, Math. Comput., published electronically, 15 August 2024. Extended preprint: https://arxiv.org/abs/2208.10078

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Overlapping Schwarz methods with GenEO coarse spaces for indefinite and non-self-adjoint problems, IMA J.Numer. Anal. 43, 1899–1936 (2023).
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https://arxiv.org/abs/2106.05218

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12. S. Gong, I.G. Graham and E.A. Spence, Domain decomposition preconditioners for high-order discretisations of the heterogeneous Helmholtz equation, dedicated to the memory of John W. Barrett, IMA J. Numer. Anal. 41, 2139–2185 (2021). https://arxiv.org/abs/2004.03996

13. I.G. Graham, E.A. Spence and J. Zou, Domain Decomposition with local impedance conditions for the Helmholtz equation with absorption. SIAM J. Numer. Anal. 58(5), 2515–2543 (2020). https://arxiv.org/abs/1806.03731

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