

Daniel J Colquitt

Curriculum Vitae

Department of Mathematical Sciences
University of Liverpool, Liverpool, L69 3BX
☎ 0151 794 6668
✉ me@danielcolquitt.com
📄 danielcolquitt.com

Employment

- 2016–Present **Lecturer in Applied Mathematics**, *University of Liverpool*, Liverpool, UK.
- 2014–2016 **Research Associate (EPSRC Doctoral Prize Fellow)**, *The Imperial College of Science, Technology & Medicine*, London, UK.
Funded by an EPSRC Doctoral Prize Fellowship & EPSRC grant no. EP/J009636/1
- 2013 **Marie Curie Research Fellow**, *University of Liverpool & EnginSoft*, Trento, Italy.
Funded by PIAP-GA-2011-286110-INTERCER2

Education

- 2010–2013 **PhD in Applied Mathematics**, *University of Liverpool*, Liverpool, Thesis: Mathematical modelling of the dynamic response of metamaterial structures.
Supervisors: Prof A B Movchan, Prof I S Jones, Prof N V Movchan
- 2006–2010 **Master of Mathematics with Honours**, *University of Liverpool*, Liverpool, (*Mathematical Physics, First Class*).

Peer Reviewed Publications

- Maling BJ, Colquitt DJ, & Craster RV. 2016 The homogenisation of Maxwell's equations with applications to photonic crystals and localised waveforms on gratings. *Wave Motion*, (*In press*).
DOI: [10.1016/j.wavemoti.2016.11.003](https://doi.org/10.1016/j.wavemoti.2016.11.003)
- Colquitt DJ, Movchan NV, & Movchan AB. 2016 Parabolic Metamaterials and Dirac Bridges. *J Mech Phys Solids*, **95**, 621–631.
DOI: [10.1016/j.jmps.2016.05.006](https://doi.org/10.1016/j.jmps.2016.05.006)
- Vanel AL, Craster RV, Colquitt DJ, & Makwana M. 2016 Asymptotics of dynamic lattice Green's functions. *Wave Motion*, **6**, 15–31.
DOI: [10.1016/j.wavemoti.2016.05.010](https://doi.org/10.1016/j.wavemoti.2016.05.010)
- Colombi A, Colquitt DJ, Roux P, Guenneau S., & Craster R.V. (2016) A seismic metamaterial: The resonant metawedge. *Sci. Rep.* **6**, 27717.
DOI: [srep27717](https://doi.org/10.1038/srep27717)
- Misseroni D, Colquitt DJ, Movchan AB, Movchan NV, & Jones IS. (2016) Cymatics for the cloaking of flexural vibrations in a structured plate. *Sci. Rep.* **6**, 23929.
DOI: [10.1038/srep23929](https://doi.org/10.1038/srep23929)
- Colquitt DJ, Craster RV, & Makwana M. (2015) High frequency homogenisation for elastic lattices. *Q. J. Mech. Appl. Math.* **68**(2), 203–230.
DOI: [10.1093/qjmam/hbv005](https://doi.org/10.1093/qjmam/hbv005)
- Colquitt DJ, Craster RV, Antonakakis, T & Guenneau. (2014) Rayleigh-Bloch waves along elastic diffraction gratings. *Proc. R. Soc. A* **471**:20140465
DOI: [10.1098/2014.0465](https://doi.org/10.1098/2014.0465)
- Brun M, Colquitt DJ, Jones IS, Movchan AB, & Movchan NV. (2014) Transformation cloaking and radial approximations for flexural waves in elastic plates. *New. J Phys.* **16**:093020
DOI: [10.1088/1367-2630/16/9/093020](https://doi.org/10.1088/1367-2630/16/9/093020)

Colquitt DJ, Brun M, Gei M, Movchan AB, Movchan NV, & Jones IS. (2014) Transformation elastodynamics and cloaking for flexural waves. *J Mech. Phys. Solids* **72**, 131–143
DOI: [10.1016/j.jmps.2014.07.014](https://doi.org/10.1016/j.jmps.2014.07.014)

Colquitt DJ, Jones IS, Movchan NV, Movchan AB, Brun M, & McPhedran RC. (2013) Making Waves Round a Structured Cloak: *Lattices, Negative Refraction and Fringes*. *Proc. R. Soc. A* **469**:20130218
DOI: [10.1098/rspa.2013.0218](https://doi.org/10.1098/rspa.2013.0218)

Colquitt DJ, Nieves MJ, Jones IS, Movchan AB, & Movchan NV. (2013) Localisation for a line defect in an infinite square lattice. *Proc. R Soc. A* **469**:20120579
DOI: [10.1098/rspa.2012.0579](https://doi.org/10.1098/rspa.2012.0579)

Colquitt DJ, Nieves MJ, Jones IS, Movchan NV, & Movchan AB. (2012) Trapping of a crack advancing through an elastic lattice. *Int. J Eng. Sci.* **61**, 129–141.
DOI: [10.1016/j.ijengsci.2012.06.016](https://doi.org/10.1016/j.ijengsci.2012.06.016)

Colquitt DJ, Jones IS, Movchan NV, Movchan AB, & McPhedran RC. (2012) Dynamic anisotropy and localization in elastic lattice systems *Waves Random Complex* **22**(2),143–159.
DOI: [17455030.2011.633940](https://doi.org/10.17455/030.2011.633940)

Colquitt DJ, Jones IS, Movchan NV, & Movchan AB. (2011) Dispersion and localisation of elastic waves in materials with microstructure. *Proc. R Soc. A* **417**(2134), 2874–2895.
DOI: [10.1098/rspa.2011.0126](https://doi.org/10.1098/rspa.2011.0126)

Colquitt DJ, Movchan AB, Jones IS, & Daniels W. (2010) Frequency related localisation of harmonic elastic waves in stratified welds. *Acta Mech. Sinica* **26**(4), 567–572.
DOI: [10.1007/s10409-010-0350-7](https://doi.org/10.1007/s10409-010-0350-7)

Peer Reviewed Conference Papers

Colquitt DJ, Movchan AB, Movchan NV, & Jones IS. (2011) Elastic Waves and Defect Modes in Micropolar Lattices. *Proc. Int. Conf. on Vibration Problems* (ed. J Náprstek et al.), 707–714. Springer Proceedings in Physics **139**.
DOI: [10.1007/978-94-007-2069-5_95](https://doi.org/10.1007/978-94-007-2069-5_95)

Submitted manuscripts

Colquitt DJ, Colombi A, Craster RV, Roux P, Guenneau SRL. 2016 Seismic metasurfaces: Sub-wavelength resonators and Rayleigh wave interaction. *arXiv*:[1608.01792](https://arxiv.org/abs/1608.01792).

Tallarico D, Movchan NV, Movchan AB, Colquitt DJ. 2016 Tilted resonators in a triangular elastic lattice: chirality, Bloch waves and negative refraction. *arXiv*:[1608.00968](https://arxiv.org/abs/1608.00968).

Selected Presentations

Metamaterials beyond photonics, *International Centre for Mathematical Sciences, Edinburgh*, (2016): **The foundations of seismic metamaterials: Plates and Half-spaces**

British Applied Mathematics Colloquium, *University of Oxford*, (2016): **The mathematical foundations of seismic metamaterials**

European Solid Mechanics Conference, *Madrid, Spain*, (2015): **High Frequency Homogenisation for Elastic Metamaterials: Structured Surfaces and Lattices.**

Elasticity Day, *University of Keele*, (2015): **Perfect Platonic Cloaking.**

International Congress on Ultrasonics, *Metz, France*, (2015): **Cloaking and transformation elastodynamics for elastic plates.**

13th International Symposium on Continuum Models and Discrete Systems, *University of Utah*, (2014): **In-plane Rayleigh-Bloch waves for elastic diffraction gratings.**

8th meeting of the GDR: “Wave Propagation in complex media for quantitative and Non-Destructive Evaluation”, *Gregynog, Wales*, (2014): **Transformation platronics and cloaking.**

Waves in Acoustics, Elasticity and in Structured Media, *Department of Mathematics, Imperial College London*, (2014): **In-plane Rayleigh-Bloch modes for elastic diffraction gratings.**

CERMODEL2013 Congress, *University of Trento*, (2013): **Dynamic broadband cloaking of a square inclusion.**

Advances in Applied Mathematics and Mechanics, *School of Mathematics, University of Manchester*, (2013): **Non-singular cloaking of a square inclusion with a microstructured coating.**

IUTAM Symposium on Fracture Phenomena in Nature & Technology, *University of Brescia*, (2012): **Effect of micro-structure on the thermal striping damage of an edge-cracked slab.**

54th British Applied Mathematics Colloquium, *University College London*, (2012): **Dynamic anisotropy & primitive waveforms in discrete elastic structures.**

Interdisciplinary workshop on Metamaterial structures & dynamic localisation of defects, *University of Liverpool*, (2011): **Dynamic anisotropy of elastic lattice systems & localisation in systems with defects.**

10th International Conference on Vibration Problems, *Prague*, (2011): **Elastic Waves & Defect Modes in Micropolar Lattices.**

53rd British Applied Mathematics Colloquium, *University of Birmingham*, (2011): **Elastic waves, defect modes, focusing & flat elastic lenses in micro-polar lattices.**

Tomorrow's Mathematicians Today, *University of Greenwich*, (2009): **Frequency related localisation of harmonic elastic waves in stratified welds.**

Industrial workshop on Waves in Structured Media & Localisation, *University of Liverpool*, (2009): **Harmonic Elastic Waves in Stratified Welds.**

Awards & Grants

- 2016 **EPSRC Impact Acceleration Grant**, The University of Liverpool. Peer Reviewed. Total funding: £2000
- 2015 **Research Impulse Grant**, The Imperial College of Science, Technology and Medicine. Peer reviewed. Total funding: £700.
- 2013 **ESPRC Doctoral Prize Fellowship**, The Imperial College of Science, Technology and Medicine. Peer reviewed. Total funding: £43,027.
- 2012 **Departmental Poster Prize**, Department of Mathematical Sciences, University of Liverpool
- 2010 **JG Oldroyd Prize**, Department of Mathematical Sciences, University of Liverpool
Awarded for special merit in the examinations in Applied Mathematics and Theoretical Physics
- 2009 **NA Software Prize**, Department of Mathematical Sciences, University of Liverpool
Awarded for the best project in the field of Mathematical Software
- 2009 **Industrial Research Scholarship**, Serco Technical Assurance Services. Total funding £1000

Teaching

Vector calculus with applications in fluid mechanics (Math225), *University of Liverpool*, Undergraduate Course, Lecturer.

Group Project Module (Math206), *University of Liverpool*, Undergraduate Course, Lecturer.

Graduate Student Supervision Alice Vanel (2014) *Dynamic Anisotropy in Microstructured Media*, MSc. Thesis, Imperial College London.
(joint supervision with Prof RV Craster)

Consultancy

2015–2016 dstl, Ministry of Defense, Contract Number DSTLX–1000091901.

Professional activities

- Review Activity Reviewer for EPSRC, Proceedings of the Royal Society of London: Series A, SIAM Journal of Applied Mathematics, Wave Motion, Journal of Engineering Mathematics, Acta Mechanica, International Journal of Solids and Structures, International Journal of Mechanical Sciences, Mathematics and Mechanics of Solids, International Journal of Engineering Science, Mathematical Methods in Applied Sciences, The Journal of the Acoustical Society of America, CRC Press, Institute of Physics Publishing, Waves in Random and Complex Media, Zeitschrift für Angewandte Mathematik und Mechanik, & Journal of Mechanics and Physics of Solids.
- Conference Organisation *Analysis of Partial Differential Equations*, (University of Liverpool, 2013)
Mini-symposium on “Multi-scale solids and homogenisation” for the *European Solid mechanics Conference*, (Bologna, 2018).
- Administrative roles NSS coordinator, Education committee member, Teaching peer reviewer