Dr David Barton
M.Eng.(Bristol), Ph.D. (Bristol)

Reader in Engineering Maths

Area of research

Summary

Office 2.44
Merchant Venturers Building,
Woodland Road, Clifton BS8 1UB
(See a map)

+44 (0) 117 331 5606
+44 (0) 117 331 5613
david.barton@bristol.ac.uk

Summary

I have a broad range of research interests across the field of applied mathematics, but I focus particularly on engineering related applications. My specialities include

- mathematical modelling (mostly engineering related, but I enjoy broader challenges and I've done some work in the bio-sciences),
- the dynamics of nonlinear systems,
- numerical methods for dynamical systems (particularly in the area of bifurcation analysis), and
- systems with delay (mostly delay differential equations).

At the moment, I am branching out into stochastic dynamics and, in particular, I'm looking the links between mathematical models and physical reality — can we use numerical methods designed to investigate mathematical models on physical experiments? (Answer: YES!)

If you are interested in working with me on any of these topics, please feel free to drop me an email (see my contact details).

Memberships

Organisations

Department of Engineering Mathematics

Other sites

- Engineering-mathematics

Research Groups

- Dynamics and Control
- Engineering Systems and Design
- Applied Nonlinear Mathematics - Core
- Engineering Education - Core

Links

- Personal webpage

Selected publications

- Barton, DAW & Burrow, SG, 2011, 'Numerical continuation in a physical experiment: investigation of a nonlinear energy harvester'. *Journal of Computational and Nonlinear Dynamics*, vol 6., pp. 011010
- Barton, D, Burrow, S & Clare, L, 2010, 'Energy Harvesting From Vibrations With a Nonlinear Oscillator'. *Journal of Vibration and Acoustics*, vol 132., pp. 021009
- Barton, D, 2009, 'Stability calculations for piecewise-smooth delay equations'. *International Journal of Bifurcation and Chaos*, vol 19., pp. 639 - 650
- Barton, D, Krauskopf, B & Wilson, R, 2007, 'Homoclinic bifurcations in a neutral delay model of a transmission line oscillator'. *Nonlinearity*, vol 20 (4)., pp. 809 - 829

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Recent publications

- Renson, L, Shaw, AD, Barton, D & Neild, S, 2019, 'Application of control-based continuation to a nonlinear structure with harmonically coupled modes'. *Mechanical Systems and Signal Processing*, vol 120., pp. 449-464
- Aquilina, K, Barton, D & Lepora, N, 2018, 'Principal Components of Touch'. in: *2018 IEEE International Conference on Robotics and Automation (ICRA 2018): Proceedings of a meeting held 21-25 May 2018, Brisbane, Australia.*. Institute of Electrical and Electronics Engineers (IEEE), pp. 4071-4078
- Zienkiewicz, AK, Ladu, F, Barton, DAW, Porfiri, M & Di Bernardo, M, 2018, 'Data-driven modelling of social forces and collective behaviour in zebrafish'. *Journal of Theoretical Biology*, vol 443., pp. 39-51
- Renson, L, Hill, T, Ehrhardt, D, Barton, D & Neild, S, 2018, 'Force appropriation of nonlinear structures'. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, vol 474.
- Hill, T, Cammarano, A, Neild, S & Barton, D, 2017, 'Identifying the significance of nonlinear normal modes'. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, vol 473.
- Renson, L, Barton, D & Neild, S, 2017, 'Experimental tracking of limit-point bifurcations and backbone curves using control-based continuation'. *International Journal of Bifurcation and Chaos*, vol 27.

View complete publications list in the University of Bristol publications system

Courses

Dr Barton currently teaches 3 courses: