

## PUBLICATIONS

### PAPERS

- [1] B. P. Rynne and B. D. Sleeman, Bloch waves and multiparameter spectral theory, *Proceedings of the Royal Society of Edinburgh* **95A** (1983), 73–93.
- [2] B. P. Rynne, Non-linear multiparameter problems, *Proceedings of University of Strathclyde seminar on Multiparameter Problems*, Ed. G. F. Roach, Shiva Publishing, (1984).
- [3] B. P. Rynne, Stability and convergence of time marching methods in scattering problems, *IMA Journal of Applied Mathematics* **35** (1985), 297–310.
- [4] B. P. Rynne and B. D. Sleeman, Bloch waves and multiparameter spectral theory, *Proceedings of the Royal Society of Edinburgh* **95A** (1983), 73–93.
- [5] B. P. Rynne, Non-linear multiparameter problems, *Proceedings of University of Strathclyde seminar on Multiparameter Problems*, Ed. G. F. Roach, Shiva Publishing, (1984).
- [6] B. P. Rynne, Stability and convergence of time marching methods in scattering problems, *IMA Journal of Applied Mathematics* **35** (1985), 297–310.
- [7] B. P. Rynne, Instabilities in time marching methods for scattering problems, *Electromagnetics* **6** (1986), 129–144.
- [8] P. Grindrod and B. P. Rynne, Time-periodic solutions to semilinear parabolic equations, *Proceedings of the Royal Society of Edinburgh* **104A** (1986), 329–342.
- [9] B. P. Rynne, Perturbation theory of multiparameter eigenvalue problems, *Journal of Mathematical Analysis and Applications* **131** (1986), 329–342.
- [10] B. P. Rynne, Tensor products and Taylor's joint spectrum in Banach spaces, *Proceedings of the Royal Irish Academy* **87A** (1987), 83–89.
- [11] B. P. Rynne, Multiparameter spectral theory of singular differential operators, *Proceedings of the Edinburgh Mathematical Society* **31** (1988), 49–66.
- [12] B. P. Rynne, Multiparameter spectral theory and Taylor's joint spectrum in Hilbert space, *Proceedings of the Edinburgh Mathematical Society* **31** (1988), 127–144.
- [13] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Metric Diophantine approximation and Hausdorff dimension on manifolds, *Mathematical Proceedings of the Cambridge Philosophical Society* **105** (1989), 547–558.
- [14] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Averaging in multifrequency systems, *Nonlinearity* **2** (1989), 137–148.
- [15] B. P. Rynne, Bifurcation from eigenvalues in multiparameter eigenvalue problems, *Nonlinear Analysis* **15** (1990), 185–198.
- [16] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Diophantine approximation and a lower bound for Hausdorff dimension, *Mathematika* **37** (1990), 59–73.
- [17] B. P. Rynne, Uniform convergence of multiparameter eigenfunction expansions, *Journal of Mathematical Analysis and Applications* **147** (1990), 340–350.
- [18] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Dirichlet's theorem and Diophantine approximation on manifolds, *Journal of Number Theory* **36** (1990), 85–88.

- [19] B. P. Rynne, A lower bound for the Hausdorff dimension of sets of singular  $n$ -tuples, *Mathematical Proceedings of the Cambridge Philosophical Society* **107** (1990), 387–394.
- [20] B. P. Rynne and P. D. Smith, Stability of time marching algorithms for the electric field integral equation, *Journal of Electromagnetic Waves and Applications* **4** (1990), 1181–1205.
- [21] B. P. Rynne and P. D. Smith, Transient scattering from a perfectly conducting cube, in *The ACES Collection of Canonical Problems I*, Ed. H. Sabbagh, ACES (1990).
- [22] B. P. Rynne, The Hausdorff dimension of certain sets of singular  $n$ -tuples, *Mathematical Proceedings of the Cambridge Philosophical Society* **108** (1990), 105–110.
- [23] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Diophantine approximation by linear forms on manifolds, *Proceedings of the Indian Academy of Sciences (Maths.)* **100** (1990), 221–229.
- [24] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Khintchine-type theorems on manifolds, *Acta Arithmetica* **57** (1991), 115–130.
- [25] B. P. Rynne, Time domain scattering from arbitrary surfaces using the electric field integral equation, *Journal of Electromagnetic Waves and Applications* **5** (1991), 93–112.
- [26] B. P. Rynne and B. D. Sleeman, The interior transmission problem and inverse scattering from inhomogeneous media, *SIAM Journal of Mathematical Analysis* **22** (1991), 1755–1762.
- [27] B. P. Rynne, P. D. Smith, R. D. Nevels, Time domain scattering calculations in the Coulomb gauge, *Microwave and Optical Technology Letters* **4** (1991), 586–589.
- [28] B. P. Rynne, The Hausdorff dimension of certain sets arising from Diophantine approximation by restricted sequences of integer vectors, *Acta Arithmetica* **61** (1992), 69–81.
- [29] B. P. Rynne, The asymptotic distribution of the eigenvalues of right definite multiparameter Sturm-Liouville systems, *Proceedings of the Edinburgh Mathematical Society* **36** (1992), 35–47.
- [30] M. M. Dodson, J. Poschel, B. P. Rynne and J. A. G. Vickers, The Hausdorff dimension of small divisors for lower dimensional KAM-tori, *Proc. of the Royal Society* **439** (1992), 359–371.
- [31] B. P. Rynne, The well-posedness of the integral equations for thin wire antennas, *IMA Journal of Applied Mathematics* **49** (1992), 35–44.
- [32] B. P. Rynne, Regular and ubiquitous systems, and  $\mathcal{M}_\infty^s$ -dense sequences, *Mathematika* **39** (1992), 234–243.
- [33] B. P. Rynne, Comments on ‘A stable procedure to calculate the transient scattering by conducting surfaces of arbitrary shape’, *IEEE Trans. on Antennas and Propagation* **41** (1993), 517–519.
- [34] B. P. Rynne, A note on the testing functions used in the method of moments solution of thin-wire antenna problems, *Microwave and Optical Technology Letters*, **6** (1993), 786–787.
- [35] B. P. Rynne, The asymptotic distribution of the eigenvalues of multiparameter Sturm-Liouville systems II, *Proc. Edin. Math. Soc.* **37** (1994), 301–316.
- [36] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, The Hausdorff dimension of exceptional sets associated with normal forms, *J. London Math. Soc.* **49** (1994), 614–624.
- [37] B. P. Rynne, Time domain scattering from dielectric bodies, *Electromagnetics*, **14** (1994), 181–193.
- [38] B. P. Rynne, The Hausdorff dimension of sets of points whose simultaneous rational approximation by sequences of integer vectors have errors with small product, *Journal of Number Theory* **48** (1994), 75–79.

- [39] B. P. Rynne, The structure of the zero sets of non-linear mappings near generic multiparameter eigenvalues, *Journal of Mathematical Analysis and Applications* **194** (1995), 147–173.
- [40] F. A. Davidson and B. P. Rynne, Local and global behaviour of steady state solutions of the Sel'kov model, *IMA Journal of Applied Mathematics* **56** (1996), 145–155.
- [41] M. M. Dodson, B. P. Rynne and J. A. G. Vickers, Simultaneous Diophantine approximation and asymptotic formulae on manifolds, *Journal of Number Theory* **58** (1996), 298–316.
- [42] B. P. Rynne, Genericity of hyperbolicity and saddle-node bifurcations in reaction-diffusion equations depending on a parameter, *J. Appl. Math. Physics (ZAMP)* **47** (1996), 730–739.
- [43] R. Bari and B. P. Rynne, The structure of Rabinowitz' global bifurcating continua for problems with weak nonlinearities, *Mathematika* **44** (1997), 419–433.
- [44] B. P. Rynne, Bifurcation from infinity in nonlinear Sturm-Liouville problems with different linearizations at ' $u = \pm\infty$ ', *Applicable Analysis* **67** (1997), 233–244.
- [45] B. P. Rynne, The structure of Rabinowitz' global bifurcating continua for generic quasilinear elliptic equations, *Nonlinear Analysis* **32** (1998), 167–181.
- [46] B. P. Rynne, Hausdorff dimension and generalized Diophantine approximation, *Bull. Lond. Math. Soc.* **30** (1998), 365–376.
- [47] B. P. Rynne, The Hausdorff dimension of sets arising from Diophantine approximation with a general error function, *J. Number Theory* **71** (1998), 166–171.
- [48] B. P. Rynne, The fractal dimension of quasi-periodic orbits, *Ergodic Theory and Dynamical Systems*. **18** (1998), 1467–1471.
- [49] B. P. Rynne, Bifurcation from zero or infinity in Sturm-Liouville problems which are not linearizable, *J. Math. Anal. Appl.* **228** (1998), 141–156.
- [50] B. P. Rynne, Global bifurcation in generic systems of nonlinear Sturm-Liouville problems, *Proc. Amer. Math. Soc.* **127** (1999), 155–165.
- [51] B. P. Rynne, The well-posedness of the electric field integral equation for transient scattering from a perfectly conducting body, *Math. Meth. Appl. Sci.* **22** (1999), 619–631.
- [52] B. P. Rynne, The well-posedness of the integral equations for thin wire antennas with distributional incident fields, *Quart. J. Mech. Appl. Math.* **52** (1999), 489–497.
- [53] B. P. Rynne, Generic properties of the Fucik spectrum of elliptic operators, *Proc. Roy. Soc. Edin.* **130A** (2000), 217–224.
- [54] B. P. Rynne, Oscillating global continua of positive solutions of nonlinear elliptic problems, *Proc. Amer. Math. Soc.* **128** (2000), 229–236.
- [55] B. P. Rynne, The Fucik spectrum of general Sturm-Liouville problems, *J. Differential Equns.* **161** (2000), 87–109.
- [56] B. P. Rynne, Convergence of Galerkin method solutions of the integral equation for thin wire antennas, *Adv. Comp. Math.* **12** (2000), 251–259.
- [57] F. A. Davidson and B. P. Rynne, A priori bounds and global existence of solutions of the steady state Sel'kov model, *Proc. Roy. Soc. Edin.* **130A** (2000), 507–516.
- [58] B. P. Rynne, On the well-posedness of Pocklington's equation for a straight wire antenna and convergence of numerical solutions, *J. Electromagnetic Waves and Applications.* **14** (2000), 1489–1503.

- [59] H. Dickinson and B. P. Rynne, Hausdorff dimension and a generalized form of simultaneous Diophantine approximation, *Acta Arithmetica*, **93** (2000), 21–36.
- [60] F. A. Davidson and B. P. Rynne, Asymptotic oscillations of continua of positive solutions of a semilinear Sturm-Liouville problem, *J. Math. Anal. Appl.* **252** (2000), 617–630.
- [61] B. P. Rynne and M. A. Youngson, Bifurcation of positive solutions from zero or infinity in elliptic problems which are not linearizable, *Nonlinear Analysis* **44** (2001), 21–31.
- [62] B. P. Rynne, Non-resonance conditions for semilinear Sturm-Liouville problems with jumping nonlinearities, *J. Differential Equns.* **170** (2001), 215–227.
- [63] B. P. Rynne, Half-eigenvalues of self-adjoint,  $2m$ th order differential operators and semilinear problems with jumping nonlinearities, *Differential and Integral Equations* **14** (2001), 1129–1152.
- [64] B. P. Rynne and C. Carstensen, A posteriori error control for finite element approximations of the integral equation for thin wire antennas, *ZAMM — Z. Angew. Math. Mech.* **82** (2002), 284–288.
- [65] F. A. Davidson and B. P. Rynne, Global bifurcation on time scales, *J. Math. Anal. Appl.* **267** (2002), 345–360.
- [66] B. P. Rynne, Infinitely many solutions of superlinear fourth order boundary value problems, *Topol. Methods Nonlinear Anal.* **19** (2002), 303–312.
- [67] B. P. Rynne, Non-resonance for Sturm-Liouville problems with jumping non-linearities in terms of average values, *Nonlinear Analysis* **51** (2002), 1319–1326.
- [68] P. J. Davies, B. P. Rynne, B. Zubik-Kowal, The time domain integral equation for a straight thin wire antenna with the reduced kernel is not well-posed, *IEEE Trans. Ant. Propagat.* **50** (2002), 1165–1166.
- [69] B. P. Rynne, Half-eigenvalues of elliptic operators, *Proc. Roy. Soc. Edin.* **132A** (2002), 1439–1451.
- [70] B. P. Rynne, Simultaneous Diophantine approximation on manifolds and Hausdorff dimension, *J. Number Th.* **98** (2003), 1–9.
- [71] B. P. Rynne, Global bifurcation for  $2m$ 'th order boundary value problems and infinitely many solutions of superlinear problems, *J. Differential Equns.* **188** (2003), 461–472.
- [72] B. P. Rynne, Second order Sturm-Liouville problems with asymmetric, superlinear nonlinearities, *Nonlinear Analysis* **54** (2003), 939–947.
- [73] B. P. Rynne, Solution curves of  $2m$ th order boundary value problems, *Electron. J Differential Equns.* **2004** (2004), No. 32, 1–16.
- [74] R Bari, B. P. Rynne, Solution curves and exact multiplicity results for  $2m$ th order boundary value problems, *J. Math. Anal. Appl.* **292** (2004), 17–22.
- [75] B. P. Rynne, Second order Sturm-Liouville problems with asymmetric, superlinear nonlinearities II, *Nonlinear Analysis.* **57** (2004), 905–916.
- [76] P. A. Binding, B. P. Rynne, Half-eigenvalues of periodic Sturm-Liouville problems, *J. Differential Equns.* **206** (2004), 280–305.
- [77] F. A. Davidson, B. P. Rynne, Curves of positive solutions of boundary values problems on time-scales, *J. Math. Anal. Appl.* **300** (2004), 491–504.

- [78] B. P. Rynne, Some recent results on periodic, jumping nonlinearity problems, pp. 229–245 in *Proceedings of Spectral Theory and Nonlinear Analysis with Applications to Spatial Ecology*, Madrid (2004), Eds. S Cano-Casanova, J Lopez-Gomez, C Mora-Corral, World Scientific, 2005.
- [79] B. P. Rynne,  $p$ -Laplacian problems with jumping nonlinearities, *J. Differential Eqns.* **226** (2006), 501–524.
- [80] F. A. Davidson, B. P. Rynne, The formulation of second order boundary value problems on time scales, *Adv. Difference Equ.* **2006**, Art. ID 31430, 10 pp.
- [81] B. P. Rynne,  $L^2$  spaces and boundary value problems on time-scales, *J. Math. Anal. Appl.* **328** (2007), 1217–1236.
- [82] P. A. Binding, B. P. Rynne, The spectrum of the periodic  $p$ -Laplacian, *J. Differential Eqns.* **235** (2007), 199–218.
- [83] B. P. Rynne, Spectral properties and nodal solutions for second-order,  $m$ -point, boundary value problems, *Nonlinear Analysis* **67** (2007), 3318–3327.
- [84] F. A. Davidson, B. P. Rynne, Eigenfunction expansions for boundary value problems on time-scales, *J. Math. Anal. Appl.* **335** (2007), 1038–1051.
- [85] F. A. Davidson, B. P. Rynne, Self-adjoint boundary value problems on time-scales, *Electron. J. Differential Eqns.*, **2007** (2007), No. 175, pp. 1–10.
- [86] P. A. Binding, B. P. Rynne, Variational and non-variational eigenvalues of the  $p$ -Laplacian, *J. Differential Eqns* **244** (2008), 24–39.
- [87] B. P. Rynne, Second-order, 3-point, boundary value problems with jumping nonlinearities, *Nonlinear Analysis* **68** (2008), 3294–3306.
- [88] N. Dodds, B. P. Rynne, Spectral properties and nodal solutions for second-order,  $m$ -point,  $p$ -Laplacian boundary value problems, *Topol. Methods Nonlinear Anal.* **32** (2008), 21–40.
- [89] P. A. Binding, B. P. Rynne, Oscillation and interlacing for various spectra of the  $p$ -Laplacian, *Nonlinear Analysis* **71** (2009), 2780–2791.
- [90] B. P. Rynne, Nonresonance conditions for generalised  $\phi$ -Laplacian problems with jumping nonlinearities, *J. Differential Eqns.* **247** (2009), 2364–2379.
- [91] B. P. Rynne, Spectral properties of second-order, multi-point,  $p$ -Laplacian boundary value problems, *Nonlinear Analysis* **72** (2010), 4244–4253.
- [92] B. P. Rynne, A global curve of stable, positive solutions for a  $p$ -Laplacian problem, *Electron. J. Differential Eqns.*, **2010** (2010), No. 58, pp. 1–12.
- [93] B. P. Rynne, Eigenvalue criteria for existence of positive solutions of second-order, multi-point,  $p$ -Laplacian boundary value problems, *Topol. Methods Nonlinear Anal.* **36** (2010), 311–326.
- [94] B. P. Rynne, Spectral properties of  $p$ -Laplacian problems with Neumann and mixed-type multi-point boundary conditions, *Nonlinear Analysis* **74** (2011), 1471–1484.
- [95] F. Genoud, B. P. Rynne, Some recent results on the spectrum of multi-point eigenvalue problems for the  $p$ -Laplacian, *Communications in Applied Analysis* **15** (2011), 413–434.
- [96] F. Genoud, B. P. Rynne, Second order, multi-point problems with variable coefficients, *Nonlinear Analysis* **74** (2011), 7269–7284.

- [97] F. Genoud, B. P. Rynne, Half eigenvalues and the Fučík spectrum of multi-point, boundary value problems, *J. Differential Equns.* **252** (2012), 5076–5095.
- [98] B. P. Rynne, Linear, second-order problems with Sturm-Liouville-type multi-point boundary conditions, *Electron. J. Differential Equns.*, **2012** (2012), No. 146, pp. 1–21.
- [99] F. Genoud, B. P. Rynne, Landesman-Lazer conditions at half-eigenvalues of the  $p$ -Laplacian, *J. Differential Equns.* **254** (2013), 3461–3475.
- [100] B. P. Rynne, Linear and nonlinear, second-order problems with Sturm-Liouville-type, multi-point boundary conditions, *Nonlinear Analysis.* **136** (2016), 195–214.
- [101] B. P. Rynne, Landesman-Lazer conditions for resonant  $p$ -Laplacian problems with jumping nonlinearities, *J. Differential Equns.* **261** (2016), 5829–5843.
- [102] B. P. Rynne, Simple bifurcation and global curves of solutions of  $p$ -Laplacian problems with radial symmetry, *J. Differential Equns.* **263** (2017), 3611–3626.
- [103] B. P. Rynne, Global stability, or instability, of positive equilibria of  $p$ -Laplacian boundary value problems with  $p$ -convex nonlinearities, *Rend. Istit. Mat. Univ. Trieste* **49** (2017), 193–206.
- [104] B. P. Rynne, Global asymptotic stability of bifurcating, positive equilibria of  $p$ -Laplacian boundary value problems with  $p$ -concave nonlinearities, *J. Differential Equns.* **266** (2019), 2244–2258.
- [105] B. P. Rynne, Exact multiplicity, and stability of solutions of a 1-dimensional,  $p$ -Laplacian problem with positive convex nonlinearity, *Nonlinear Analysis* **183** (2019), 271–283.
- [106] B. P. Rynne, Linearised stability implies asymptotic stability for radially symmetric equilibria of  $p$ -Laplacian boundary value problems in the unit ball in  $\mathbb{R}^N$ , *Electron. J. Differential Equations.* **2019** (2019), No. 94, pp. 1–17.
- [107] B. P. Rynne, Linearised stability implies dynamic stability for equilibria of 1-dimensional,  $p$ -Laplacian boundary value problems, *Proc. Roy. Soc. Edinburgh, Sect. A* **150** (2020), 1313–1338.
- [108] B. P. Rynne, Stability of solutions of a 1-dimensional,  $p$ -Laplacian problem and the shape of the bifurcation curve, *Nonlinear Analysis* **196** (2020), 111757.

## BOOKS

- [1] M. Ainsworth, P. Davies, D. Duncan, P. Martin and B. P. Rynne (Editors), *Topics in Computational Wave Propagation and Inverse Problems*, Springer-Verlag (2003).
- [2] B. P. Rynne and M. A. Youngson, *Linear Functional Analysis*, Springer-Verlag (2000). Second Edition (2007).