

A/Prof. T.R. Marchant
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Publications

Journal articles

1. T.R. Marchant and A.J. Roberts, “Properties of short-crested waves in water of finite depth”, *J. Austral. Math. Soc. Ser. B* **29**, 103-125 (1987).
2. T.R. Marchant and A.J. Roberts, “A variational approach to the problem of deep-water waves forming a circular caustic”, *J. Fluid Mech.* **194**, 581-597 (1988).
3. T.R. Marchant and A.J. Roberts, “Reflection of nonlinear deep-water waves incident onto a wedge of arbitrary angle”, *J. Austral. Math. Soc. Ser. B* **32**, 61-96 (1990).
4. T.R. Marchant and N.F. Smyth, “The extended Korteweg-de Vries equation and the resonant flow of a fluid over topography”, *J. Fluid Mech.* **221**, 263-288 (1990)
5. T.R. Marchant and N.F. Smyth, “Initial boundary value problems for the Korteweg-de Vries equation”, *IMA J. Appl. Maths.* **47**, 247-264 (1991)
6. T.R. Marchant and N.F. Smyth, “Microwave heating of materials with non-ohmic conductance”, *SIAM J. Appl. Math.* **53**, 1591-1612 (1993)
7. T.R. Marchant, “Thermal waves for nonlinear hyperbolic heat conduction”, *J. Math. and Computer Modelling* **18** 111-122 (1993)
8. T.R. Marchant and A.H. Pincombe, “Microwave heating of materials with temperature dependent wavespeed”, *Wave Motion* **19** 67-82 (1994)
9. T.R. Marchant, “Microwave heating of materials with impurities”, *J. Engng. Maths.* **28** 379-400 (1994).
10. S.P. Zhu, Y.L. Zhang and T.R. Marchant, “A DRBEM model for microwave heating”, *Appl. Math. Modelling* **19** 287-297 (1995).
11. J.M. Hill and T.R. Marchant, “Modelling microwave heating”, *Appl. Math. Modelling* **20** 3-16 (1996)
12. T.R. Marchant, “The evolution and interaction of Marangoni-Bénard solitary waves”, *Wave Motion* **23** 307-320 (1996)
13. T.R. Marchant and N.F. Smyth, “Soliton interaction for the extended Korteweg-de Vries equation”, *IMA J. Appl. Math.* **56** 157-176 (1996)
14. T.R. Marchant and B. Liu, “Microwave irradiation and Arrhenius heating of slabs”, *J. Engng. Maths.* **33** 219-236 (1998).

15. T.R. Marchant and N.F. Smyth, "Pulse evolution for Marangoni-Bénard convection", *J. Math. and Computer Modelling* **28** 45-58 (1998)
16. M. Lee and T.R. Marchant, "Microwave thawing of slabs", *Appl. Math. Modelling* **23** 363-383 (1999)
17. T.R. Marchant, "Asymptotic solitons of the extended Korteweg-de Vries equation", *Phys. Rev. E* **59** 3745-3748 (1999)
18. B. Liu and T.R. Marchant, "The microwave heating of two-dimensional slabs with small Arrhenius absorptivity", *IMA J. Appl. Maths.* **62** 137-166 (1999)
19. T.R. Marchant, "Coupled Korteweg-de Vries equations describing, to high-order, resonant flow of a fluid over topography", *Phys. Fluids* **11** 1797-1804 (1999)
20. T.R. Marchant, "Solitary wave interaction for the extended BBM equation", *Proc. R. Soc. Lond. A* **456** 433-454 (2000)
21. T.R. Marchant and B. Liu, "On the heating of a two-dimensional slab in a microwave cavity: aperture effects", *ANZIAM J.* **43** 137-148 (2001).
22. T.R. Marchant and N.F. Smyth, "The initial-boundary value problem for the Korteweg-de Vries equation on the negative quarter-plane", *Proc. R. Soc. Lond. A* **458** 857-872 (2002)
23. T.R. Marchant, "Cubic autocatalytic reaction-diffusion equations: semi-analytical solutions", *Proc. R. Soc. Lond. A* **458** 873-888 (2002)
24. B. Liu and T.R. Marchant, "The microwave heating of three-dimensional blocks: semi-analytical solutions", *IMA J. Appl. Maths.* **67** 145-175 (2002)
25. B. Liu and T.R. Marchant, "On the occurrence of limit-cycles during feedback control of microwave heating", *Math. and Computer Modelling* **35** 1095-1118 (2002)
26. T.R. Marchant, "Numerical solitary wave interaction: the order of the inelastic effect", *ANZIAM J.* **44** 95-102 (2002)
27. T.R. Marchant, "High-order interaction of solitary waves on shallow water", *Stud. Appl. Math.* **109** 1-17 (2002)
28. M. Lee and T.R. Marchant, "Semi-analytical solutions for continuous-flow microwave reactors", *J. Engng. Maths.* **44** 125-145 (2002).
29. T.R. Marchant, "Asymptotic solitons for a higher-order modified Korteweg-de Vries equation", *Phy. Rev. E* **66** 046623 (2002)
30. T.R. Marchant, "Asymptotic solitons for a third-order Korteweg-de Vries equation", *Chaos, Solitons and Fractals* **22** 261-270 (2004)
31. M. Lee and T.R. Marchant, "Microwave thawing of cylinders", *Appl. Math. Modelling* **28** 711-733 (2004)

32. T.R. Marchant and M.I. Nelson, "Semi-analytical solutions for one and two-dimensional pellet problems", *Proc. R. Soc. Lond.* **460** 2381-2394 (2004)
33. T.R. Marchant, "Cubic autocatalysis with Michaelis-Menten kinetics: semi-analytical solutions for the reaction-diffusion cell" *Chem. Engng. Sci.* **59** 3433-3440 (2004)
34. T.R. Marchant and N.F. Smyth, "Approximate solutions for magmon propagation from a reservoir", *IMA J. Appl. Math.* **70** 796-813 (2005)
35. J.F. Counce, S.I. Barry, G.N. Mercer and T.R. Marchant, "Modelling a wool scour bowl", *ANZIAM J. (E)* **47**, C19-C33 (2006)
36. T.R. Marchant and N.F. Smyth, "Undular bore solution of the Camassa-Holm equation", *Physical Review E* **73**, 057602 (2006)
37. T.R. Marchant and N.F. Smyth, "An undular bore solution for the higher-order Korteweg-de Vries equation", *J. Phys. A: Math. Gen.* **39**, L563-L569 (2006)
38. S.M. Hoseini and T.R. Marchant, "Solitary wave interaction and evolution for a higher-order Hirota equation", *Wave Motion* **44**, 92-106 (2006)
39. T.R. Marchant, "Asymptotic solitons on a non-zero mean level", *Chaos, Solitons and Fractals* **32** 1328-1336 (2007)
40. S.M. Hoseini and T.R. Marchant, "Solitary wave interaction for a higher-order nonlinear Schrödinger equation", *IMA J. Applied Maths.* **72** 191-205 (2007)
41. J.F. Counce, S.I. Barry, G.N. Mercer and T.R. Marchant, "Numerical simulation of contaminant flow in a wool scour bowl", *Math. and Computer Modelling* **46** 499-512 (2007)
42. M.I. Nelson, T.R. Marchant, G. Wake, E. Balakrishnan and X.D. Chen, "Self-heating in compost piles due to biological self-heating", *Chem. Engng. Sci.* (to appear, 2007)

Refereed conference papers

1. E. Siores, D. DoRego, N. Cetojevic and T.R. Marchant, *FABCON/FABFAIR*, Towards "Two-dimensional transient heat transfer computations of microwave joining of polymers", *FABCON/FABFAIR, Towards a competitive edge: proc. 41st Ann. Weld. Conf. and Nat. AINDT Conf.* 152-160 Weld. Tech. Instit. of Aust. (1993)
2. T.R. Marchant, S.P. Zhu, Y.L. Zhang, "A mathematical model for welding two-dimensional slabs using microwave energy", *Proc. Fifth Aust. Heat Mass Trans. Conf.* 15.1-15.6 (1993)
3. S.P. Zhu, Y.L. Zhang and T.R. Marchant, "Modelling microwave heating with DRBEM", *Bound. Elem. XVI 21-28*, Comp. Mech. Pub., Southhampton, Boston (1994)
4. T.R. Marchant and I. Porter, "Modelling auxiliary ventilation systems for long tunnels", *Conf. Proc. AEMC96* 73-78 (1996)

5. T.R. Marchant, "Thermal runaway during microwave welding", *Conf. Proc. AEMC96 201-208* (1996)
6. B. Liu and T.R. Marchant, "Microwave sintering of Alumina slabs", *Conf. Proc. Aust. Sym. Comb. and 5th Aust. Flame Days 184-188* (1997).
7. I. Porter and T.R. Marchant, "Determination of methane flow into coal mine headings", *Conf. Proc. AEMC98 403-406* (1998)
8. T.R. Marchant and B. Liu, "A semi-analytical model of microwave heating", *Conf. Proc. AMPERE99 221-224* (1999)
9. "A perturbation DRBEM model for weakly nonlinear wave runups around islands", (with H. Liu and S. Zhu) *Proc. Fourteenth Eng. Mech. Conf. ACME, CDRROM ZHU.pdf* (2000).
10. S. Barry, T.R. Marchant and G. Mercer, "Mathematical modelling of a wool-scour bowl", *Proc. EMAC02 73-78* (2002)
11. B. Liu, T.R. Marchant, I.W. Turner and V. Vegh, "A comparison of semi-analytical and numerical solutions for the microwave heating of a lossy material in a three-dimensional waveguide", *Microwave and Radio Frequency Applications, eds D.C. Folz et. al.* The American Ceramic Society, 17-27 (2003)

Refereed Book Chapters

1. S. Barry, T.R. Marchant and G. Mercer, "Grease recovery and dirt removal in wool scouring", *Proc. MISG02 106-124* (2003)
2. T.R. Marchant and G. Weir, "Earthquake damage in underground roadways", *Proc. MISG04 89-101* (2005)
3. T.R. Marchant, A. Nickerson, D. Scott and S. Taylor, "Development of empirical relationships for the metallurgical design of hot-rolled steel products", *Proc. MISG05 53-72* (2005)