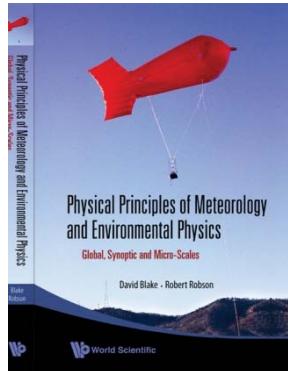


Theses

Ph.D. “Transport phenomena in neutral and ionized gases”, Australian National Univ., 1972

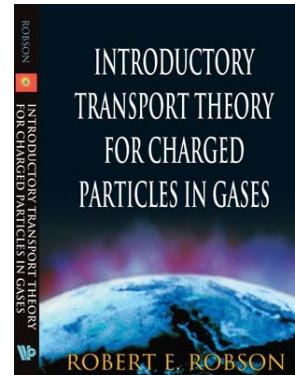
B.Sc. (Honours) “Irreversible thermodynamics”, University of Queensland, 1967

Books



“Introductory transport theory for charged particles in neutral gases” (ISBN 981-270-011-0 , World Scientific, Singapore, 2006),
R.E. Robson

“Physical principles of meteorology and environmental physics”
(ISBN 13978-981-281-384-8, World Scientific, Singapore, 2008),
D.J. Blake and R.E. Robson



Refereed Articles

1. “The phenomenological equations of thermodynamics: A separation of geometrical and physical properties”, Ann. Phys.60, 46-66 (1970), R.E. Robson
2. “On the validity of the two-term approximation of the electron distribution function”, Aust. J. Phys. 24, 835-40 (1971), R.E. Robson and K. Kumar
3. “Transport phenomena in neutral and ionized gases”, Bull. Aust. Math.Soc.7, 312 (1972), R.E. Robson
4. “A thermodynamic treatment of anisotropic diffusion in an electric field”, Aust. J. Phys. 25, 685-93 (1972), R.E. Robson
5. “The significance of high momentum - transfer collisions in ionized gases”, J. Phys. B5, 839-48 (1972), R.E. Robson
6. “Interaction of plasma and lattice waves in piezoelectric semiconductors”, Phys. Stat. Sol.(b) 59, 641-50 (1973), R.E. Robson and B.V. Paranjape
7. “Diffusivity of charge carriers in semiconductors in strong fields”, Phys. Rev. Lett. 31, 25-8 (1973), R.E. Robson
8. “Mobility and diffusion: I Boltzmann equation treatment for charged particles in a neutral gas”, Aust. J. Phys. 26, 157-86 (1973), K. Kumar and R.E. Robson
9. “Mobility and diffusion: II Dependence on experimental variables and interaction potential for alkali ions in rare gases”, Aust. J. Phys. 26, 187-201 (1973), R.E. Robson and K. Kumar
10. “Mobility of ions in gas mixtures”, Aust. J. Phys.26, 203-6 (1973), R.E. Robson
11. “The mobility of potassium ions in gas mixtures, J. Phys. B6, 1139-52 (1973) H.B. Milloy and R.E. Robson

12. "Composition dependence of ion transport coefficients in gas mixtures", Phys. Rev. A9, 1017-20 (1974), J.H. Whealton, E.A. Mason and R.E. Robson
13. "The determination of ion-atom interaction potentials", Aust. J. Phys. 27, 787-94 (1974), H.B. Milloy, R.O. Watts, R.E. Robson and M.T. Elford
14. "Nonlinear diffusion of ions in a gas", Aust. J. Phys. 28, 523-31 (1975), R.E. Robson
15. "Nonlinear diffusion of ions in a gas: II Diffusion in finite enclosures", Aust. J. Phys. 29, 171-5 (1976), R.E. Robson
16. "Diffusion cooling of electrons in a finite gas", Phys. Rev. A13, 1536-42 (1976), R.E. Robson
17. "On the generalized Einstein relation for gaseous ions in an electric field", J. Phys. B Lett. 9, 337-9 (1976), R.E. Robson
18. "Moment theory of electron drift and diffusion in neutral gases in an electrostatic field", J. Chem. Phys. 71, 3483-98 (1979), S.L. Lin, R.E. Robson and E.A. Mason
19. "Variational principles in hot atom chemistry", Chem. Phys. Lett. 66, 535-8 (1979), R.E. Robson
20. "Kinetic theory of charged particle swarms in neutral gases", Aust. J. Phys. 33, 343-448 (1980), K. Kumar, H.R. Skallerud and R.E. Robson
21. "Influence of boundaries on electron diffusion in a gas in an electric field", Proc. First B.A.I.L. Conf., Dublin, June, 1980 (Boole Press, Dublin), pp407-9, R.E. Robson
22. "On the scattering of sound in a turbulent flow", Quart. J. Roy. Met. Soc. 107, 345-50 (1981), R.E. Robson and R. Potts
23. "On boundary effects in solution of Boltzmann's equation for electron swarms", Aust. J. Phys. 34, 223-41 (1981), R.E. Robson
24. "Effect of anisotropic scattering on electron transport", Aust. J. Phys. 34, 243-9 (1981), S. L. Lin, G. N. Haddad and R.E. Robson
25. "Comment on 'Field-dependence of mobility in gases'", Phys. Rev. A25, 2411-3 (1982), R.E. Robson and E. A. Mason
26. "On plume trapping by an elevated inversion", Atmos. Env. 17, 1923-30 (1983), R.E. Robson
27. "Negative differential conductivity and the generalized Einstein relation", Aust. J. Phys. 37, 35-44 (1984), R.E. Robson
28. "Simplified theory of first and second-order scattering of H.F. radio waves from the sea", Rad. Sci. 19, 1499-1505 (1984), R.E. Robson
29. "Diffusion corrections in electron conductance transients", Phys. Rev. A 31, 3492-6 (1985), R.E. Robson
30. "Interaction integrals in the kinetic theory of gases", Trans. Theory Stat. Phys. 14, 257-90 (1985), K.F. Ness and R.E. Robson
31. "Velocity distribution function and transport coefficients of electron swarms in gases: I Spherical harmonics decomposition of Boltzmann's equation", Phys. Rev. A 33, 2068-77 (1986), R.E. Robson and K.F. Ness

32. "Velocity distribution function and transport coefficients of electron swarms in gases: II Moment equations and applications", Phys. Rev. A 34, 2185-2209 (1986), K.F. Ness and R.E. Robson
33. "Interpretation of backscattered radio waves from the sea", Aust. J. Phys. 39, 395-9 (1986), G.R.S. Naylor and R.E. Robson
34. "Physics of reacting particle swarms in gases", J. Chem. Phys. 85, 4486-501 (1986), R.E. Robson
35. "Dispersion in a stable atmospheric layer with a quadratic exchange coefficient", Boundary Layer Met. 39, 207-18 (1987), R.E. Robson
36. "Physics of reacting particle swarms. II The muon-catalyzed cold fusion cycle", J. Chem. Phys. 88, 198-205(1988), R.E. Robson
37. "Electron transport properties in water vapour", Phys. Rev. A 38, 1446-56 (1988), K.F. Ness and R.E. Robson
38. "Physics of reacting particle swarms. III Effect on ionization upon transport coefficients", J. Chem. Phys. 89, 4815-20 (1988), R.E. Robson and K. Ness
39. "Elementary calculation of soil damping depth", Amer. J. Phys. 57, 632-4 (1989), R.E. Robson
40. "Motion of muons in heavy hydrogen in an electrostatic field", Phys.Rev.A39, 6596-9 (1989), K.F. Ness and R.E. Robson
41. "Mean energies of ion swarms drifting and diffusing through neutral gases", Int. J. Mass. Spec. Ion Proc. 90, 167-86 (1989), L.A. Viehland and R.E. Robson
42. "A simple derivation of distribution functions for Bose and Fermi statistics", Amer. J. Phys. 57, 1150-1 (1989), R.E. Robson
43. "Comment on slip velocity at a fluid-solid boundary", Phys. Chem. of Liquids, 21, 147-156 (1990), B.V. Paranjape and R.E. Robson
44. "Comment on the discrete ordinate method in the kinetic theory of gases", J. Comp. Phys. 92, 213-29 (1991), R.E. Robson, K.F. Ness, G.E. Sneddon and L.A. Viehland.
45. "Transport phenomena in the presence of reactions: Definition and measurement of swarm transport coefficients", Aust. J. Phys. 44, 685 (1991), R.E. Robson
46. "A review of the theory of scattering of HF radio waves from the sea based upon a simplified model", Aust. J. Phys. 44, 459-94 (1991), B. T. McGann and R.E. Robson
47. "Eigenvalue problems in gaseous electronics theory," pp. 89-101 of "Gaseous electronics and its applications", editors R.W. Crompton et al (Kluwer, Dordrecht, 1991), R.E. Robson
48. "Acoustoelectric effects in a gaseous medium", Phys. Rev. A 45, 8972-4 (1992), R.E. Robson and B.V. Paranjape.
49. "Muon-catalyzed cold fusion: Just another swarm experiment"? Aust. N.Z. Phys. 29, 39-42 (1992), R.E. Robson (1992), R.E. Robson
50. "The discrete-ordinate/pseudospectral method: Review and application from a physicist's perspective", Aust. J. Phys. 46, 465-95 (1993) R.E. Robson and A. Prytz.

51. "Nernst, Ettinghausen and Righi - Leduc phenomena in relation to the quantum Hall effect in two-dimensional electron assemblies", J. Phys. Chem. Sol. 54, 745-6 (1993), N.H. March, B.V. Paranjape and R.E. Robson
52. "Anisotropic dispersion of a charged particle swarm in a turbulent gas in an electrostatic field", Aust. J. Phys. 46, 261-70 (1993), R.E. Robson
53. "Haeffner effect in a binary isotopic dilute plasma", Plasma Phys. Cont. Fusion 36, 635-40 (1994), R.E. Robson, B.V. Paranjape and N.H. March
54. "A simple model of countergradient flow", Phys. Fluids 6, 1952-5 (1994), R.E. Robson and C.L. Mayocchi
55. "Transport coefficients and velocity distribution function of an ion swarm in a gas in an a.c. field obtained from BGK kinetic equation", Aust. J. Phys. 47, 305-314 (1994), R.E. Robson and T. Makabe
56. "Approximate formulas for ion and electron transport coefficients in crossed electric and magnetic fields" Aust. J. Phys. 47, 279-304 (1994), R.E. Robson
57. "Calculation of transport coefficients for swarms in crossed electric and magnetic fields", Phys. Scripta, T53, 5-8 (1994), K.F. Ness and R.E. Robson
58. "Turbulent dispersion of pollutant over complex terrain", Boundary Layer Met. 72, 149-75 (1995), J. Ma and R.E. Robson
59. "An adaptive pseudospectral solution for atmospheric diffusion problems", J. Appl. Met. 34, 955-70 (1995), J. Ma and R.E. Robson
60. Frequency variation of the mean energy of r.f. electron swarms", Aust. J. Phys. 48, 335-45 (1995), R.E. Robson, K. Maeda, T. Makabe and R.D. White
61. "A comparative analysis of the steady-state Townsend experiment using Boltzmann and diffusion equations", R.E. Robson, Aust. J. Phys. 48, 347-56 (1995)
62. "Comment on FTI method and transport coefficients for charged particle swarms in neutral gases", Aust. J. Phys. 48, 677-89 (1995) R.E. Robson
63. "Anomalous anisotropic diffusion of electrons in an a.c. field", Aust. J. Phys. 48, 925-37 (1995), R.D. White, R.E. Robson and K.F. Ness
64. "Diffusion cooling of electrons in an a.c. field", Aust. J. Phys. 50, 577-89(1997), R.E. Robson
65. "Electron transport theory in gases: Must it be so difficult?", Nucl. Instr. Meth. A 394, 74-86 (1997), R.E. Robson, M. Hildebrandt and B. Schmidt
66. "Low energy atomic, molecular and chemical physics: A workshop in honour of Professor Bob Crompton", Comm. Atom. Mol. Opt. Phys. D33, 370-8 (1997), S.J. Buckman, R.E. Robson and M.J. Brunger
67. "Charged particle transport in harmonically varying electric fields: Foundations and phenomenology", Ann. Phys. 261, 74-113 (1997), R.E. Robson, R.D. White and T. Makabe
68. "Turbulent countergradient flow as a problem in kinetic theory", in *Two-dimensional Turbulence in Fluids and Plasmas*, editors R.L. Dewar and R.W. Griffiths, (Amer. Inst. Phys. Conf. Proc. 414, New York, 1997) pp. 255-267, R.E. Robson and C.L. Mayocchi

69. "Multi-term solution of the reactive space-time dependent Boltzmann equation", J. Vac. Sci. Tech. A 16, 316-23 (1998), R.D. White, R.E. Robson and K.F. Ness
70. Charged particle transport in gases in electric and magnetic fields at arbitrary angles: Multi-term solution of Boltzmann's equation", Phys. Rev. E 60, 2231-49 (1999), R.D. White, K.F. Ness, R.E. Robson, B. Li
71. "Velocity distribution functions for electron swarms in methane under the influence of electric and magnetic fields at arbitrary angles", J. Phys. D. 32, 1842-50(1999), R.D. White, K.F. Ness and R.E. Robson
72. "On approximations involved in the theory of charged particle transport in gases in electric and magnetic fields at arbitrary angles", IEEE Trans. Plasma 27, 1249-52 (1999) R.D. White, R.E. Robson and K.F. Ness
73. "Nonconservative charged particle swarms in a.c. electric fields", Phys. Rev. E 60, 7457-72 (1999) R. D. White, R.E. Robson and K.F. Ness
74. "The Franck-Hertz experiment: A kinetic theory perspective", Aust. N.Z. Phys. 36, 146-9 (1999), R.E. Robson, B. Li and R.D. White
75. "Diffusion cooling in a magnetic field", Phys. Rev. E61, 848-54 (2000), R.E. Robson
76. "Spatially periodic structures in electron swarms and the Franck-Hertz experiment, J. Phys. B33, 507-20 (2000), R.E. Robson, B. Li and R.D. White
77. "Dispersion of meteor trails in the upper atmosphere, Phys. Rev. E 63, 026404 (5 pages) (2001) R.E. Robson
78. "An experiment to measure the thermal properties of kangaroo and koala fur, and box jelly fish tissue", The Physicist 38, 25-8 (2001), R.E. Robson, R. Hinrichsen and A. Krockenberger
79. "Visualization of ion and electron velocity distribution functions in electric and magnetic fields", J. Phys. D 34, 2205-10 (2001), R.D. White, R.E. Robson and K.F. Ness
80. "Transport coefficients in crossed E and B fields: Empirical relations and non-conservative collisional effects", Annals of Physics 292, 179-98 (2001), B. Li, R.D. White, R.E. Robson and K.F. Ness
81. "Negative conductivity in gases: the true origin", J. Phys. Soc. Jap. 70, 3556-9(2001) D. Blake and R.E. Robson
82. "New challenges for a new millenium", Comp. Phys. Comm. 142, Nos. 1-3 (15 December, 2001), R.E. Robson, P.D. Drummond and K.V. Kheruntsyan (editors)
83. "Computation of electron and ion transport properties in gases", Comp. Phys. Comm., 142, 349-55(2001), R.D. White, R.E. Robson and K.F. Ness
84. "Development of swarm transport theory in radio frequency electric and crossed electric and magnetic fields", Appl. Surface Science 192, 26-49 (2002), R.D. White, K.F. Ness and R.E. Robson
85. "Multiterm spherical tensor representation of Boltzmann's equation for a weakly ionised, nonhydrodynamic plasma", Phys. Rev. E 65, 056410 (2002), R.E. Robson, R. Winkler and F. Sigeneger
86. "More heat over greenhouse gases", Physics Today, May, 2002, pages 14-15, R.E. Robson
87. "Spatially periodic structures in electron swarms: ionisation, NDC effects and multiterm analysis", J Phys D 35, 2914 (2002), B. Li, R.D. White and R.E. Robson

88. "What really happens in the electron gas in the famous Franck-Hertz experiment", Contrib. Plasma Phys 43, 178-97 (2003), F. Sigeneger, R. Winkler and R.E. Robson
89. "Negative electron mobility, Joule cooling and the Second Law", J. Chem. Phys. 119, 11249-52 (2003), R.E. Robson, Z. Petrović, D. Loffhagen and Z. Raspopović
90. "Is the classical two-term approximation of electron kinetic theory satisfactory for swarms and plasmas?", J. Phys. D 36, 3125-31 (2003), R.D. White, R.E. Robson, M.A. Morrison and B. Schmidt
91. "Some fundamental questions concerning the kinetic theory of electrons in molecular gases and the (e,H₂) vibrational cross section controversy", J. Phys. B 36, 4127-43 (2003), R.E. Robson, R.D. White and M.A. Morrison
92. "Cross sections and transport coefficients for electrons in zinc vapour", J. Phys. D 37, 3185-91 (2004), R.D. White, R.P. McEachran, R.E. Robson, M.T. Elford and K. Bartschat
93. "Physical and human factors associated with the politics of water", The Physicist 41, 183-5 (2004), R.E. Robson
94. "Electron transport coefficients in O₂ magnetron discharges", J. Phys D 38, 997-1004 (2005), R.D. White, R.E. Robson, K.F. Ness and T. Makabe
95. "An analytically solvable model in nonhydrodynamic fractional kinetic theory", Phys. Rev. E 71, 061104 (2005), R.E. Robson and A. Blumen
96. "Fluid equations for low temperature plasma and charged particle swarms: Formulation and foundations", Rev Mod Phys 77, 1303-20 (2005), R.E. Robson, R.D. White and Z. Lj. Petrović
97. "Magnetic field effects on spatial relaxation of swarm particles in the idealized steady-state Townsend experiment", Phys. Rev. E 74, 026405(13 pages) (2006), B. Li, R.E. Robson and R.D. White
98. "Non-conservative electron transport in CF₄ in electric and magnetic fields crossed at arbitrary angles" J. Phys. D 39, 4788-98 (2006), S. Dujko, R.D. White, K.F. Ness, Z. Lj. Petrović and R.E. Robson
99. "Non-equilibrium electron transport in gases: Influence of magnetic fields on temporal and spatial relaxation", AIP Conf. Proc. 876, 51-61 (2006) R.D. White, B. Li, S. Dujko, K.F. Ness and R.E. Robson
100. "Time-dependent multiterm solution of Boltzmann's equation for magnetized low temperature plasmas", ANZIAM E Journal 48, C50-68 (2006), R.D. White, S. Dujko, K.F. Ness, R.E. Robson, Z. Raspopović and Z. Lj. Petrović
101. "The v=0 → 1 vibrational cross section for e-H₂ scattering: An unresolved problem with wide implications", J. Phys. Conf. Series 71, 012004 (2007), R.D. White, R.E. Robson, M.A. Morrison, B. Li and K.F. Ness
102. "Periodic electron structures in gases: A fluid model of the window phenomenon", Phys. Rev. Lett. 100, 124502 (2008), P. Nicoletopoulos and R.E. Robson
103. "Kinetic theoretical and fluid modelling of plasmas and swarms: the big picture", Plasma Sources Sci. and Technol. 17, 024020 (2008), R.E. Robson, P. Nicoletopoulos, B. Li and R.D. White
104. "Monte Carlo simulation of non-conservative positron transport in pure argon", New J. Phys. 10, 053034 (2008), M. Suvakov, Z. Lj. Petrović, J.P. Marler, S.J. Buckman, R.E. Robson and G. Malovic

105. "On the existence of transiently negative diffusion coefficients for electrons in gases in ExB fields", J. Phys. D 41 025206 (2008), R.D. White, S. Dujko, K.F. Ness, R.E. Robson, Z. Raspopović and Z. Petrović
106. "Negative differential conductivity of positrons in gases", Nuclear Instruments and Methods in Physics Research B 267 350–353 (2009), A. Banković, Z.Lj. Petrović, R.E. Robson, J.P. Marler, S. Dujko and G. Malovic
107. "Positron kinetics in soft condensed matter", Phys. Rev. Lett. 102, 230602 (2009), R.D. White and R.E. Robson
108. "Recent advances in the application of Boltzmann equation and fluid equation methods to charged particle transport in non-equilibrium plasmas", J. Phys. D 42, 194001 (2009), R.D. White, R.E. Robson, S. Dujko, P. Nicoletopoulos and B. Li
109. "Benchmark calculations of non-conservative charged particle swarms in electric and magnetic fields cross at arbitrary angles", Phys Rev. E 81, 046403 (2010), S. Dujko, R.D. White, Z. Lj. Petrovic, and R.E. Robson
110. "Non-equilibrium transport of positron and electron swarms in gases and liquids", Plasma Sources Sci. Technol. 19, 034001 (2010), R.D. White, S. Dujko, R.E. Robson, Z. Lj. Petrovic and R.P. Mc Eachran
111. "Transport coefficients and cross sections for electrons in water vapour: Definition, measurement and calculation", J. Chem. Phys. 134, 064319 (2011), R.E. Robson, R.D. White and K.F. Ness
112. "Fluid analysis of positrons in soft matter", J. Phys. Conf. Series 262, 012008 (2011), G. J. Boyle, R.D. White and R.E. Robson
113. "Simulations of pulses in a buffer gas positron trap", J. Phys. Conf. Series 262, 012057 (2011), W. Tattersall, R.D. White, R.E. Robson and S.J. Buckman
114. "A multi term solution of the non-conservative Boltzmann equation for the analysis of temporal and spatial non-local effects in charged particle swarms in electric and magnetic fields", PSST 20, 024013 (2011), S. Dujko, R.D. White, Z. Lj. Petrovic and R.E. Robson
115. "Analytic solution of the fractional advection diffusion equation for the time-of-flight experiment in a finite geometry", Phys. Rev. E, 84, 041138 (2011), B.Philippa, R.D. White and R.E. Robson
116. "Multiterm solution of a generalized Boltzmann's equation for electron and positron transport in soft-condensed matter", Phys. Rev. E, 84, 031125 (2011), R.D. White and R.E. Robson
117. "A multi term solution of the non-conservative Boltzmann equation analysis for the analysis of temporal and spatial non-local effects in charged-particle swarms in electric and magnetic fields", Plasma Source Sci. Technol. 20, 024013 15pp (2011), S. Dujko, R.D. White, R.E. Robson and Z. Lj. Petrovic
- 118 "Fluid equation treatment of positrons in soft condensed matter", J. Phys. Conf. Series 262, 012008 (2011), G. Boyle, R.D. White and R.E. Robson
119. "Simulations of Pulses in a Buffer Gas Positron Trap", J. Phys. Conf. Series 262, 012057 (2011), W. Tattersall, R. D. White, R. E. Robson, J. P. Sullivan and S. J. Buckman

120. "Transport coefficients for electrons in water vapour: Definition, measurement and calculation", J. Chem. Phys. 134 064319 (2011), R.E. Robson, R.D. White and K.F. Ness
121. "Multiterm solution of a generalized Boltzmann's equation for electron and positron transport in soft-condensed matter", Phys. Rev. E 84, 031125 (2011), R.D. White and R.E. Robson
122. "Positron and Electron Interactions and Transport in Biological Media: Modelling Tracks and Radiation Damage", Chapter 14 of "Radiation Damage in Biomolecular Systems" (Eds. G. Garcia and M. Fuss, ISBN 978-94-007-2563-8) pp. 227-236 (Springer, 2012) , R.D. White, J.P. Sullivan, A. Bankovic, S. Dujko, R.E. Robson, Z. Lj. Petrovic, G. Garcia, M.J. Brunger and S.J. Buckman
123. "Transport coefficients for electrons in water vapour: Comparison of cross section sets using an improved Boltzmann equation solution", J. Chem. Phys. 136, 024318 (2012), K.F. Ness, R.E. Robson, M.J. Brunger and R.D. White
124. "Periodic structures in the neon Franck Hertz experiment: Experiment and transport theory", European Physical Journal D 66, 177(2012), R.D. White, R.E. Robson, P. Nicoletopoulos and S. Dujko
125. "Why antimatter matters (especially for PET)", R.E. Robson and R.D. White, in "Preserving the Humboldt Tradition in Australia", Editor: T. Finlayson (Aust. Assoc. von Humboldt Fellows, Univ. Melbourne, 2012)
126. "On the approximation of transport properties in structured materials using momentum transfer theory", New J. Phys. 14 045011 (2012), G. Boyle, R.D. White, R.E. Robson, S. Dujko and Z. Lj. Petrovic
127. "Fluid analysis of electron swarms in a space-varying electric field: Nonlocality and resonance phenomena", Phys. Rev. E 85, 046404 (2012), P. Nicoletopoulos, R.E. Robson and R.D. White
128. "Fundamental issues in fluid modelling: Direct substitution and aliasing methods" J. Chem. Phys. (in press, 2012), R.E. Robson, P. Nicoletopoulos, M. Hildebrandt, and R.D. White