

Publications and Patents

Robert B. Israel

a) Journals

1. Perturbations of Fredholm Operators, *Studia Mathematica* 52:1-8 (1974)
2. Existence of Phase Transitions for Long-Range Interactions, *Communications in Mathematical Physics* 43:59-68 (1975)
3. High-Temperature Analyticity in Classical Lattice Systems, *Communications in Mathematical Physics* 50:245-257 (1976)
4. Phase Transitions and Reflection Positivity. I. General Theory and Long Range Lattice Models (with J. Fröhlich, E. Lieb and B. Simon), *Communications in Mathematical Physics* 62:1-34 (1978)
5. Quark Confinement in the Two-Dimensional Lattice Higgs-Villain Model (with C.R. Nappi), *Communications in Mathematical Physics* 64:177-189 (1979)
6. Exponential Clustering for Long-Range Integer-Spin Systems (with C.R. Nappi), *Communications in Mathematical Physics* 64:177-189 (1979)
7. Comment on "Grading Answer-Until Correct Tests", *American Mathematical Monthly* 86 (1979) 700-701.
8. Phase Transitions and Reflection Positivity. II. Lattice Systems with Short Range and Coulomb Interactions (with J. Fröhlich, E. Lieb and B. Simon), *Journal of Statistical Physics* 22:297-347 (1980)
9. Stronger Players Need Not Win More Knockout Tournaments, *J. of American Statistical Association* 76: 950-951 (1981)
10. Some Convexity Questions Arising in Statistical Mechanics (with R.R. Phelps), *Mathematica Scandinavica* 54:133-156 (1984)
11. Some Examples Concerning the Global Markov Property, *Communications in Mathematical Physics* 105:669-673 (1986)
12. Generic Triviality of Phase Diagrams in Spaces of Long-Range Interactions, *Communications in Mathematical Physics* 106:459-466 (1986)
13. Tips for Maple Instructors: To Float or Not to Float, *MapleTech Journal* 5:47-50 (1998)
14. Finding Generators for Markov Chains via Empirical Transition Matrices, with Applications to Credit Ratings (with Jeffrey S. Rosenthal and Jason Z. Wei), *Mathematical Finance* 11 (2001), 245-265
15. Old Idaho Usual Here (with S. Morris and S. Wagon), *Crux Mathematicorum* 34 (2008)
16. Cooling Coffee Without Solving Differential Equations (with P. Saltzman and S. Wagon), *Mathematics Magazine* 86 (2013) 204-210.
17. Discrete optimization using quantum annealing on sparse Ising models (with Z. Bian, F. Chudak, W.G. Macready and A. Roy), *Frontiers in Physics* 2:56 (2014).
18. Mapping Constrained Optimization Problems to Quantum Annealing with Application to Fault Diagnosis (with Z. Bian, F. Chudak, B. Lackey, W.G. Macready and A. Roy), *Frontiers in Physics* 3:14 (2016).

b) Conference Proceedings

1. Phase Transitions in One-Dimensional Lattice Systems, IUPAP Conference on Statistical Physics, Haifa, August 1977: *Annals of the Israel Physical Society* 2:528-531 (1978)
2. Banach Algebras and Kadanoff Transformations, Random Fields Conference, Esztergom (Hungary) June 1979: *Colloquia Mathematica Societatis Janos Bolyai* 27 (1979)
3. Metric Invariants of Tetrahedra via Polynomial Elimination (with Petr Lisonek), ISSAC 2000 conference, Aberdeen (Scotland), July 2000, 217-219
4. Some Generic Results in Mathematical Physics, EURANDOM Workshop on "Gibbs vs. Non-Gibbs" in statistical mechanics and related fields, Eindhoven, The Netherlands, Dec. 8 2003: *Markov Processes and Related Fields* 10 (2004), 517-521

c) Books

1. Convexity in the Theory of Lattice Gases, Princeton Series in Physics, Princeton University Press, Princeton NJ (1979)
2. Calculus the Maple Way, Addison-Wesley Publishers, Don Mills 1996
3. Calculus the Maple Way, Second Edition, Addison-Wesley Publishers, Don Mills 2000
4. Article: Gibbs Distributions, in: Encyclopedia of Statistical Sciences vol. 3, S. Katz and N.L. Johnson, eds., Wiley-Interscience, New York 1983

d) Patents applied for (assigned to D-Wave Systems)

1. Systems and Methods of Finding Quantum Binary Optimization Problems. United States Patent Application 20150193692 (2015).
2. Systems and Methods for Finding Quantum Binary Optimization Problems (with W.G. Macready, Z. Bian, F. Chudak and M. Ranjbar). United States Patent Application 20150205759 (2015).
3. Systems and Methods for Problem Solving, Useful For Example in Quantum Computing (with F. Hamze, A. King, J. Raymond, A. Roy, E. Andriyash, C. McGeoch and M. Ranjbar). WIPO Patent Application WO/2016/029172 (2016).

e) Other works

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Problem 5831, American Mathematical Monthly 80 (1973) 329
Problem 6127, American Mathematical Monthly 85(1978) 604
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Problem 91-9, SIAM Review 34 (1992) 315
Problem 6520, American Mathematical Monthly 95 (1988) 266
Problem 6522, American Mathematical Monthly 95 (1988) 360
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Problem 88-9, Mathematical Intelligencer 11 (1989) 32
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Problem proposals:

Problem 6520, American Mathematical Monthly 93 (1986) 403
Problem E3390, American Mathematical Monthly 97 (1990) 428

Web pages:

Maple Advisor Database, <http://www.math.ubc.ca/~israel/advisor>, 1998

Maple application documents:

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The Orbit of Kepler 16b <http://www.maplesoft.com/applications/view.aspx?SID=126766> 2011
Great Expectations <http://www.maplesoft.com/applications/view.aspx?SID=127116> 2011
An Epidemic Model (for Influenza or Zombies)
<http://www.maplesoft.com/applications/view.aspx?SID=127836> 2011