

## Curriculum Vitae

### John Michael Kosterlitz

Professor of Physics, Department of Physics, Brown University, Providence, RI 02912

### Education

1965 B.A., Gonville and Caius College, Cambridge University  
1966 M.A., Gonville and Caius College, Cambridge University  
1969 D.Phil., Oxford University

### Professional Appointments

1969-70 Royal Society Exchange Fellowship, Instituto di Fisica Teorica, Torino, Italy  
1970-73 Research Fellow, Dept. Mathematical Physics, Birmingham University, UK  
1973-74 Postdoctoral Fellow, LASSP, Cornell University, Ithaca, NY  
1974-78 Lecturer, Dept. Mathematical Physics, Birmingham  
1978-80 Senior Lecturer, Department of Mathematical Physics, Birmingham  
1980-81 Reader in Mathematical Physics, Dept. Mathematical Physics, Birmingham  
1982-present Professor of Physics, Brown University

### Visiting Professor:

1978 Department of Physics, Princeton University  
1978 Bell Laboratories, NJ  
1978 Department of Physics, Harvard University  
Jan-May 1985 Laboratoire de Physique des Solides, Univ. d'Orsay, France  
June 1985 CEN, Saclay, France  
Jan-Mar 1991 Department of Physics, McGill University, Canada  
Apr-May 1991 Department of Physics, Neuchatel University, Switzerland  
Jan-Feb 1998 INPE, Sao Jose dos Campos, Sao Paulo, Brazil  
Mar 1998 Dept. Physics, Birmingham University, UK  
Apr-Jun 1998 Dept. Physics, Helsinki University, Finland  
July 1998 ICTP, Trieste, Italy  
August 1999 Department of Physics, McGill University, Canada  
August 2000 Department of Physics, McGill University, Canada  
July 2004 Korea Institute for Advanced Study, Seoul, Korea  
Oct - Dec 2005 Korea Institute for Advanced Study, Seoul, Korea

## Completed Publications

- Book Chapters

1. “Physics in Two Dimensions,” (with D. J. Thouless) in *Prog. Low Temp. Phys.*, (D.F. Brewer, ed.), Vol. VII-B, North Holland, 1978.
2. “Ordering in Two Dimensions,” in *Phase Transitions in Surface Films*, (J.G. Dash and J. Ruvalds, eds.), Plenum Press, 1980.
3. “Melting in Two Dimensions,” in *Proceedings of 1981 Geilo Winter School*, (T. Riste, ed.), Plenum Press, 1982.
4. “Numerical Studies of Phase Transitions” (with Jooyoung Lee and E. Granato), in *Computer Simulations in Condensed Matter Physics IV*, (D.P. Landau, K.K. Mon and H.B. Schuttler, eds.), Springer, Heidelberg, p. 28, 1992.

- Refereed Journal Articles

1. “A Double Regge Model of Production Processes,” *Nucl. Phys.* **B9** (1969).
2. “Vector–Pseudoscalar Scattering in the Veneziano Model,” *Nucl. Phys.* **B13**, 129 (1969).
3. “The Algebra of Currents and the Veneziano Model – the A1M System,” S. P. De Alwis, P. Brooker, J.M. Kosterlitz and D. Nutbrown, *Phys. Lett.* **B29**, 362 (1969).
4. “The General N–Point Vertex in a Dual Model,” D. A. Wray and J.M. Kosterlitz, *Lett. al Nuovo Cimento* **3**, 491 (1970).
5. “Dual N-Reggeon Vertex in the Field Operator Formalism,” J.M. Kosterlitz and S. Saito, *Nucl. Phys.* **B34**, 557 (1971).
6. “The N-Reggeon Vertex in the Dual Resonance Model,” J.M. Kosterlitz and S. Saito, *Nucl. Phys.* **B38**, 269 (1972).
7. “Long Range Order and Metastability in Two–Dimensional Solids and Superfluids,” J.M. Kosterlitz and D.J. Thouless, *J. Phys.* **C5**, 124 (1972).
8. “Ordering Metastability, and Phase Transitions in Two–Dimensional Systems,” J.M. Kosterlitz and D.J. Thouless, *J. Phys.* **C6**, 1181 (1973).
9. “Critical Exponents of the Two–Dimensional XY Model,” J.M. Kosterlitz, *J. Phys.* **C7**, 1046 (1974).
10. “Critical Scattering for General Fields and Temperatures,” M. Combescot, M. Droz and J.M. Kosterlitz, *Phys. Rev. Lett.* **33**, 705 (1974).
11. “Two Point Correlation Function for General Fields and Temperatures,” M. Combescot, M. Droz and J.M. Kosterlitz, *Phys. Rev.* **B11**, 4661 (1974).
12. “Renormalization Group Analysis of Bicritical and Tetracritical Points,” D.R. Nelson, M.E. Fisher and J.M. Kosterlitz, *Phys. Rev. Lett.* **33**, 813 (1974).
13. “Bicritical and Tetracritical Points in Anisotropic Antiferromagnetic Systems, D.R. Nelson, J.M. Kosterlitz and M.E. Fisher, *Phys. Rev.* **B13**, 412 (1976).
14. “Crossover Effects in Anisotropic Spin Systems,” J.M. Kosterlitz, *J. Phys.* **C9**, 497 (1976).

15. "Crossover Phenomena in Isotropic Dipolar Ferromagnets," A.D. Bruce, J.M. Kosterlitz and D.R. Nelson, *J. Phys.* **C9** (1976).
16. "Phase Transitions in Long-Range Ferromagnetic Chains," J.M. Kosterlitz, *Phys. Rev. Lett.* **37**, 1577 (1976).
17. "Spherical Model of a Spin Glass," J.M. Kosterlitz, D.J. Thouless and R. C. Jones, *Phys. Rev. Lett.* **36**, 1277 (1976).
18. "The d-Dimensional Coulomb Gas and the Roughening Transition," J.M. Kosterlitz, *Phys. C* **10**, 3753 (1977).
19. "Two Point Correlations in the Ising Model," Y. Achiam and J.M. Kosterlitz, *J. Phys.* **C10**, 4559 (1977).
20. "Universal Jump in the Superfluid Density of Two-Dimensional Superfluids," D. R. Nelson and J.M. Kosterlitz, *Phys. Rev. Lett.* **39**, 1201 (1977).
21. "Phase Transitions in Layered Magnetic Systems," J.M. Kosterlitz and M. Santos, *J. Phys.* **C11**, 2835 (1978).
22. "Real Space Renormalization Group for Critical Dynamics," Y. Achiam and J.M. Kosterlitz, *Phys. Rev. Lett.* **41**, 128 (1978).
23. "Infinite Range Spin Glass with M-Component Spins," J.R.L. de Almeida, R.C. Jones, J.M. Kosterlitz and D. J. Thouless, *J. Phys.* **C11**, L871 (1978).
24. "Stability and Susceptibility in Parisi's Solution of a Spin Glass Model," J.R.L. de Almeida, J.M. Kosterlitz and D. J. Thouless, *J. Phys.* **C13**, 3271 (1980).
25. "Spherical Model of a Spin Glass," J.M. Kosterlitz, D.J. Thouless and R.C. Jones, *Physica* 86-88B (1977).
26. "Eigenvalue Spectrum of a Large Random Matrix with Finite Mean," R.C. Jones, J.M. Kosterlitz and D.J. Thouless, *J. Phys.* **A11**, L45 (1978).
27. "Non-Uniform Long-Range Order in Certain Random Systems," R.A. Pelcovits and J.M. Kosterlitz, *J. Phys.* **A16**, L763 (1983).
28. "Commensurate-Incommensurate Transitions and a Floating Devil's Staircase," B. Horowitz, T. Bohr, J.M. Kosterlitz and H.J. Schulz, *Phys. Rev.* **B28**, 6596 (1983).
29. "A Random Anisotropy Model: 1/N Expansion for Gaussian Fluctuations in the Spin Glass Phase and the Replica Symmetry Breaking Instability", A. Khurana, A. Jagannathan and J.M. Kosterlitz, *Nucl. Phys.* **B240**, F512 (1984).
30. "Dynamics of a Random Axis Model," A. Jagannathan, J.M. Kosterlitz and B. Schaub, *Nucl. Phys.* **B265** FS15 324 (1986).
31. "Scaling of Conductivities in the Fractional Quantum Hall Effect," R. Laughlin, M. Cohen, J.M. Kosterlitz, H. Levine, S. B. Libby and A. Pruisken, *Phys. Rev.* **B32**, 1311 (1985).
32. "Dynamics of One-Dimensional Potts Models," P. O. Weir and J.M. Kosterlitz, *Phys. Rev.* **B32**, 391 (1986).
33. "Comment on Critical Relaxation of the 1D Blume-Emery Griffiths Model", P.O. Weir and J.M. Kosterlitz, *Phys. Rev.* **B33**, 622 (1986).

34. "Critical Behaviour of Coupled XY Models," E. Granato, J.M. Kosterlitz and S. Poulter, Phys. Rev. **B33**, 4767 (1986).
35. "Frustrated XY Model with Unequal Ferromagnetic and Antiferromagnetic Bonds", E. Granato and J.M. Kosterlitz, J. Phys. **C19**, L59 (1986).
36. "Quenched Disorder in Josephson–Junction Arrays in a Transverse Magnetic Field," E. Granato and J.M. Kosterlitz, Phys. Rev. **B33**, 6533 (1986).
37. "Resistance Oscillations in a Josephson–Junction Array in a Magnetic Field," E. Granato and J.M. Kosterlitz, Phys. Rev. **B34**, 2026 (1986).
38. "Non-Universality in the Dynamics of the One–Dimensional Potts Model," S.H. Adachi J.M. Kosterlitz and P.O. Weir, J. Phys. **A19** L757 (1986).
39. "Renormalisation Group Treatment of the Long Range One Dimensional Ising Model with Random Fields," P.O. Weir and J.M. Kosterlitz, Phys. Rev. **B36**, 5760 (1987).
40. "Phase Transformations of the H/W(110) and H/Mo(110) Surfaces," M. Altman, J.W. Chung, P.J. Estrup, J.M. Kosterlitz, J. Prybyla, D. Sahu and S.C. Ying, J. Vac. Sci. Tech. **A5**, 1045 (1987).
41. "Theory of Phase Transitions on H/W(110) and H/Mo(110)," D. Sahu J.M. Kosterlitz and S. C. Ying in *The Structure of Surfaces II*, J.F. van der Veen and M.A. Van Hove, eds. (Springer-Verlag) (1988).
42. "Equilibrium Study of Strained Epitaxial Layers on a Rigid Substrate", E. Granato J.M. Kosterlitz and S.C. Ying, Proc.of Latin American Conference on Semiconductor Physics (San Carlos, Brazil, 1987).
43. "Helicity Modulus of a Frustrated XY Model," E. Granato and J.M. Kosterlitz, J. Appl. Phys. **64**, 5636 (1988).
44. "Disorder in Josephson Junction Arrays," J.M. Kosterlitz and E. Granato, Physica **B152**, 62 (1988).
45. "Equilibrium Theory of Strained Epitaxial Layers," E. Granato, J.M. Kosterlitz and S.C. Ying, Phys. Rev. **B39**, 3185 (1989).
46. "Melting of a Free Bilayer," E. Granato, J.M. Kosterlitz and S.C. Ying) Phys. Rev. **B39**, 4444 (1989).
47. "Disorder in Josephson Junction Arrays in a Magnetic Field," E. Granato and J.M. Kosterlitz, Phys. Rev. Lett. **62**, 823 (1989).
48. "Growth in a Restricted Solid on Solid Model," J.M. Kim and J.M. Kosterlitz, Phys. Rev. Lett. **62**, 2289 (1989).
49. "Reply to "Growth: Noise Reduction and Universality"," J.M. Kim and J.M. Kosterlitz, Phys. Rev. Lett. **63**, 1192 (1989).
50. "Comment on "Phase Transitions in a Restricted Solid-on-Solid Surface Growth Model in 2 + 1 Dimensions"," J.M. Kim, T. Ala-Nissila and J.M. Kosterlitz, Phys. Rev. Lett **64**, 2333 (1990).
51. "New Numerical Method to Study Phase Transitions," Jooyoung Lee and J.M. Kosterlitz, Phys. Rev. Lett **65**, 137 (1990).

52. "Superconductor-Insulator Transition and Universal Resistance in Josephson Junction Arrays in a Magnetic Field," E. Granato and J.M. Kosterlitz, Phys. Rev. Lett. **65**, 1267 (1990).
53. "Finite Size Scaling and Monte Carlo Simulations of First Order Phase Transitions," Jooyoung Lee and J.M. Kosterlitz, Phys. Rev. **B43**, 3265 (1991).
54. "Three Dimensional q-state Potts Model - Monte Carlo Study Near  $q = 3$ ," Jooyoung Lee and J.M. Kosterlitz, Phys. Rev. **B43**, 1268 (1991).
55. "Phase Transitions in a Coupled XY-Ising Model", E. Granato, J.M. Kosterlitz, Jooyoung Lee and P.M. Nightingale, Phys. Rev. Lett. **66**, 1090 (1991).
56. "Phase Transitions in Fully Frustrated XY Models", E. Granato, J.M. Kosterlitz and Jooyoung Lee, Phys. Rev. **B43**, 11531 (1991).
57. "Fully Frustrated Junction Arrays and Coupled XY-Ising Models," E. Granato, J.M. Kosterlitz and Jooyoung Lee, Phys. Rev. **B44**, 4819 (1991).
58. "Surface Growth and Crossover Behavior in a Restricted Solid-on-Solid Model", J.M. Kim, T. Ala-Nissila and J.M. Kosterlitz, J. Phys. A **A24**, 5569 (1991).
59. "Driven Growth in RSOS Model in Higher Dimensions" T. Ala-Nissila, T. Hjelt and J.M. Kosterlitz, Europhys. Lett. **19**, 1 (1992).
60. "Exact Dynamical Exponent at the KPZ Roughening Transition" C.A. Doty and J.M. Kosterlitz, Phys. Rev. Lett. **69**, 1979 (1992).
61. "Scaling Exponents for KPZ Roughening in Higher Dimensions", T. Hjelt, T. Ala-Nissila and J.M. Kosterlitz, J. Stat. Phys. **72**, 207 (1993).
62. "Directional Solidification in Two and Three Dimensions" , B. Grossman, K.R. Elder, J.M. Kosterlitz and M. Grant, Phys. Rev. Lett. **71**, 3323 (1993)
63. "Stochastic Eutectic Growth", K.R. Elder, F. Drolet, M. Grant and J.M. Kosterlitz, Phys. Rev. Lett. **72**, 677 (1994).
64. "Numerical Studies of the Two-Dimensional XY Model with Symmetry Breaking Fields," T. Ala-Nissila, E. Granato, K. Kankaala, J.M. Kosterlitz and S.C. Ying, Phys. Rev. **B50**, 12692, (1994).
65. "Conformal Anomaly and Critical Exponents of a Coupled XY- Ising Model", M.P. Nightingale, E. Granato and J.M. Kosterlitz, Phys. Rev. **B52**, 7402, (1995).
66. "Critical Behavior of Josephson Junction Arrays at  $f=1/2$ ", E. Granato, M.P. Nightingale and J.M. Kosterlitz, Physica **B222**, 266, (1996)
67. "Finite Size and Current Effects on IV Characteristics of Josephson Junction Arrays", M.V Simkin and J.M. Kosterlitz, Phys. Rev. B **55**, 11646, (1997)
68. "Phase Diagram of an RSOS Model Coupled to an Ising Model", S. Lee, K-C. Lee and J.M. Kosterlitz, Phys. Rev. **B56**, 340, (1997).
69. "Numerical Study of a Superconducting Glass Model", J.M. Kosterlitz and M.V. Simkin, Phys. Rev. Lett. **79**, 1098, (1997).
70. "Edge Effects in a Frustrated Josephson Junction Array with Modulated Couplings", E. Granato, J.M. Kosterlitz and M.V. Simkin, Phys. Rev. B **57**, 3602 (1998).

71. "Simple Model for Anisotropic Step Growth", J. Heinonen, I. Bukharev, T. Ala-Nissila and J.M. Kosterlitz, Phys. Rev. **E57**, 6851 (1998).
72. "Charge Glass in Two-Dimensional Arrays of Capacitively Coupled Grains with Random Offset Charges", E. Granato and J.M. Kosterlitz, Phys. Rev. Lett. **81**, 3888 (1998).
73. "Numerical Study of Order in a Gauge Glass Model", J.M. Kosterlitz and N. Akino, Phys. Rev. Lett. **81**, 4672 (1998).
74. "Phase-field Modeling of Eutectic Growth", F. Drölet, K.R. Elder, M. Grant and J.M. Kosterlitz, Phys. Rev. **E61**, 6705 (2000).
75. "Numerical Study of Spin and Chiral Order in a Two-Dimensional XY Spin Glass", J.M. Kosterlitz and N. Akino, Phys. Rev. Lett. **82**, 4094 (1999).
76. "Sharp Interface Limits of Phase-Field Models", K.R. Elder, Martin Grant, N. Provatas and J.M. Kosterlitz, Phys. Rev. E **64**, 021604 (2001)
77. "Domain Wall Renormalization Group Study of XY Model with Quenched Random Phase Shifts", N. Akino and J.M. Kosterlitz, Phys. Rev. B **66**, 054536 (2002)
78. "Surface Instability and Dislocation Nucleation in Strained Epitaxial Layers", O. Trushin, E. Granato, S-C. Ying, J.M. Kosterlitz, T. Ala-Nissila and P. Salo, Brazilian Journal of Physics, **32**, 369 (2002)
79. "Screened Vortex Lattice Model with Disorder", C. Giardinà, N.V. Priezjev and J.M. Kosterlitz, cond-mat/0202487 (2002)
80. "Numerical study of random superconductors", N. Akino, C. Giardinà, J.M. Kosterlitz and N.V. Priezjev, Physica C **408-410**, 484 (2004)
81. "Pattern Selection in a Phase Field Model for Directional Solidification", R.N. Costa Filho, J.M. Kosterlitz and Enzo Granato, Physica A - Statistical Mechanics and its Applications **354**, 333 (2005)

#### **Academic Honors:**

- 1980 Maxwell Medal, awarded by Institute of Physics
- 1993 Elected Fellow of American Physical Society
- 2000 Lars Onsager Prize awarded by American Physical Society