

CV Tom Lubensky (3/30/2011)

Department of Physics and Astronomy
University of Pennsylvania
Philadelphia, PA 19104-6396

Tel: (215) 898-7002 Fax: (215) 573-3897 Email: tom@physics.upenn.edu
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Professional Preparation:

California Institute of Technology	Physics	B.S.	1964
Harvard University	Physics	M.A.	1965
Harvard University	Physics	Ph.D.	1969

Appointments:

2009- Christopher H. Browne Distinguished Professor of Physics, University of Pennsylvania

2001-2009 Chair, Department of Physics and Astronomy, University of Pennsylvania

2001 Poste Rouge au CNRS, Ecole Normale Supérieure, Lyon, France

1998-2009 Mary Amanda Wood Chair of Physics, University of Pennsylvania

1998-2001 Associate Director, Laboratory for Research in the Structure of Matter, University of Pennsylvania

1990-95 Consultant EXXON Research and Engineering, Annandale, New Jersey

1989-90 Visiting Research Associate at the Ecole Supérieure de Physique et de Chimie Industrielles (ESPCI) de la Ville de *Paris* (Poste Rouge au CNRS)

1981-82 Visiting Professor at the Ecole Normale Supérieure, Paris, France

1980 Professor, University of Pennsylvania

1976 Research Associate, Harvard University

1975-80 Associate Professor, University of Pennsylvania

1971-75 Assistant Professor, University of Pennsylvania

1970-71 Postdoctoral Fellow, Brown University

1969-70 NSF Postdoctoral Fellow, University of Paris, Orsay, France

Honors and Awards:

2010 Michelin Professor at the Ecole École Supérieure de Physique et de Chimie Industrielles de la Ville de *Paris* (ESPCI)

2008 Elected to the American Academy of Arts and Sciences

2004 Honored Member of the International Liquid Crystal Society

2004 Oliver E. Buckley Prize of the American Physical Society

2002 Elected to the National Academy of Sciences

2000 Fellow, American Association for the Advancement of Science

1985 Fellow, American Physical Society

1981 Guggenheim Fellow

1975-77 Alfred P. Sloan Fellow

Service:

2011- Simons Foundation pane for Investigators in Physics

2010- Editorial Board of PNAS

- 2006 - Executive Committee of the International Liquid Crystal Society
- 2009 External Review Committee, Department of Physics, Korea Advanced Institute of Science and Technology (KAIST)
- 2008- Chair, Section 33 of the National Academy of Sciences
- 2007 External Review Committee, Department of Physics, Duke University
- 2006 External Review Committee, Korea Institute for Advanced Study (KIAS)
- 2006 External Review Committee, Department of Physics, Boston University
- 2001 External Review Committee, Department of Physics, University of Texas, Austin
- 2001 Chair, Gordon Conference on Liquid Crystals
- 1998-2001 Member-at-Large (elected) of the Executive Committee of the Division of Condensed Matter Physics (DCMP) of the American Physical Society
- 1998-2001 Member, Advisory Board for the Institute for Theoretical Physics, Santa Barbara
- 1997-2004 Editorial Board, Physical Review E
- 1996 Co-coordinator of Aspen Institute for Theoretical Physics program on Topological Defects in Soft Condensed Matter Physics
- 1996-99 Member of the Advisory Committee for Science of Soft Surfaces and Interfaces Program of the Canadian Institute for Advanced Research
- 1996- Member Editorial Advisory Board of Molecular Crystals and Liquid Crystals
- 1996-2002 Member Editorial Council of Annals of Physics
- 1992 Co-coordinator of Aspen Institute for Theoretical Physics program on Self-Assembling Systems
- 1988 Co-coordinator of Aspen Institute for Theoretical Physics program on Complex Fluids
- 1987-88 Co-coordinator of program on Quasicrystals and Related Structures at the Institute for Theoretical Physics in Santa Barbara

Publications of Tom C. Lubensky (3/30/2011)

Books

Chaikin, P.M., and Lubensky, T.C., *Principles of Condensed Matter Physics*, (Cambridge University Press, Cambridge, 1995).

Articles in Refereed Journals

1. Lubensky, T.C., Magnetic response functions I: conserving systems, *Annals of Physics* **64**, 424-451 (1971).
2. Lubensky, T.C., Magnetic response functions II: non-conserving systems, *Annals of Physics* **64**, 452-473 (1971).
3. Lubensky, T.C., A calculation of the elastic K_{11} for a nematic liquid crystal, *Physics Letters A* **33**, 202-203 (1970).
4. Lubensky, T.C., Molecular description of nematic liquid crystals, *Physical Review A* **2**, 2497-2514 (1970).
5. Forster, D., Lubensky, T.C., Martin, P.C., Swift, J., and Pershan, P.S. Hydrodynamics of liquid crystals, *Physical Review Letters* **26**, 1016-1019 (1971).
6. Lubensky, T.C., Hydrodynamics of cholesteric liquid crystals, *Physical Review A* **6**, 452-470 (1972).
7. Lubensky, T.C., Low-temperature phase of infinite cholesterics, *Physical Review Letters* **29**, 206-209 (1972).

8. Lubensky, T.C., A spin model for cholesteric liquid crystals, *Journal of Physics & Chemistry of Solids* **34**, 365-370 (1973).
9. Lubensky, T.C., A derivation of the hydrodynamical equations for superfluid helium, *Journal of Low Temperature Physics* **11**, 247-254 (1973).
10. Lubensky, T.C., Hydrodynamics of cholesterics in an external magnetic field, *Molecular Crystals & Liquid Crystals* **23**, 99-109 (1973).
11. Priest, R.G., and Lubensky, T.C., Biaxial model of cholesteric liquid crystals, *Physical Review A* **9**, 893-898 (1974).
12. Lubensky, T.C., and Rubin, M.H., ϵ -Expansion in semi-infinite Ising systems, *Physical Review Letters* **31**, 1469-1472 (1973).
13. Halperin, B.I., Lubensky, T.C., and Ma, S.-K., First-Order Phase Transition in superconductors and smectic-A liquid crystals, *Physical Review Letters* **32**, 292-295 (1974).
14. Halperin, B.I., and Lubensky, T.C., On the analogy between smectic-A liquid crystals and superconductors. *Solid State Communications* **14**, 997-1001 (1974).
15. Lubensky, T.C., and Priest, R.G., Critical exponents for a symmetric-traceless-tensor field theory model, *Physics Letters A* **48**, 103-104 (1974).
16. Lubensky, T.C., Latent heat of the cholesteric to smectic-A transition, *J. Phys. Colloq.* **1**, 151 (1975).
17. Harris, A.B., and Lubensky, T.C., Renormalization-group approach to the critical behaviour of random spin models, *Physical Review Letters* **33**, 1540-1543 (1974).
18. Lubensky, T.C., Critical properties of random spin models from the ϵ -expansion, *Physical Review B* **11**, 3573-3580 (1975).
19. Lubensky, T.C., and Rubin, M.H., Critical phenomena in semi-infinite systems I: ϵ -expansion for positive extrapolation length, *Physical Review B* **11**, 4533-4546 (1975).
20. Harris, A.B., Lubensky, T.C., Holcomb, W.K., and Dasgupta, C., Renormalization group approach to percolation problems, *Physical Review Letters* **35**, 327-330 (1975).
21. Lubensky, T.C., and Rubin, M.H., Critical phenomena in semi-infinite systems II: mean-field theory, *Physical Review B* **12**, 3885-3901 (1975).
22. Harris, A.B., Lubensky, T.C., and Chen, J.-H., Critical properties of spin glasses, *Physical Review Letters* **36**, 415-418 (1976).
23. DeMoura, M.A., Lubensky, T.C., Imry, Y., and Aharony, A., Coupling to anisotropic elastic media: magnetic and liquid-crystal phase transitions, *Physical Review B* **13**, 2176-2185 (1976).
24. Priest, R.G., and Lubensky, T.C., Critical properties of two tensor models with application to the percolation problem, *Physical Review B* **13**, 4159-4171 (1976); erratum, *Physical Review B* **14**, 5125 (1976).
25. Chen, J.-H., and Lubensky, T.C., Landau-Ginzburg mean-field theory for the nematic to smectic-C and nematic to smectic-A phase transitions, *Physical Review A* **14**, 1202-1207 (1976).
26. Meyer, R.B., and Lubensky, T.C., Mean-field theory of the nematic-smectic-A phase change in liquid crystals, *Physical Review A* **14**, 2307-2320 (1976).
27. Lubensky, T.C., Scaling theory of phase transitions in diluted systems near the percolation threshold, *Physical Review B* **15**, 311-314 (1977).
28. Chen, J.-H., and Lubensky, T.C., Mean field and ϵ -expansion study of spin glasses, *Physical Review B* **16**, 2106-2114 (1977).
29. Harris, A.B., and Lubensky, T.C., Spin-glass and related orderings in quenched random-spin systems, *Physical Review B* **16**, 2141-2147 (1977).
30. Lubensky, T.C., and Chen, J.-C., Anisotropic critical properties of the de Gennes model for the nematic to smectic-A phase transition, *Physical Review B* **17**, 366-376 (1978).
31. Dasgupta, C., Harris, A.B., and Lubensky, T.C., Renormalization-group treatment of the random resistor network, 6- ϵ dimensions, *Physical Review B* **17**, 1375-1382 (1978).
32. Chen, J.-C., Lubensky, T.C., and Nelson, D.R., Crossover near fluctuation-induced first-order phase transitions in superconductors, *Physical Review B* **17**, 4274-4286 (1978).

33. Lubensky, T.C., Critical exponents for the zero-state Potts model in $2 + \epsilon$ dimensions, *Physics Letters A* **67A**, 169-170 (1978).
34. Lubensky, T.C., and Isaacson, J., Field theory for the statistics of branched polymers gelation and vulcanization, *Physical Review Letters* **41**, 829-832 (1978)
35. Lubensky, T.C., Dasgupta, C., and Chaves, C.M., Statistics of trees and branched polymers from a generalized Hilhorst model, *Journal of Physics A* **11**, 2219-2236 (1978).
36. Alexander, S., and Lubensky, T.C., Textural singularities and frustration in random anisotropy and random field models, *Physical Review Letters* **42**, 125-129 (1979).
37. Hossain, K.A., Swift, J., Chen, J.-H., and Lubensky, T.C., Dynamics near the nematic-smectic-A and nematic-smectic-C phase transitions in liquid crystals, *Physical Review B* **19**, 432-440 (1979).
38. Lubensky, T.C., and Isaacson, J. Statistics of lattice animals and dilute branched polymers, *Physical Review A* **20**, 2130-2146 (1979).
39. Coniglio, A., and Lubensky, T.C., ϵ -expansion for correlated percolation: applications to gels, *Journal of Physics A* **13**, 1783-1789 (1980).
40. Harris, A.B., and Lubensky, T.C., Mean field theory and ϵ -expansion for Anderson localization, *Solid State Communications* **34**, 343-346 (1980).
41. Houghton, A., and Lubensky, T.C., The metastable Ising magnet in a negative field, *Physics Letters A* **77A**, 479-480 (1980).
42. Isaacson, J. and Lubensky, T.C., Flory exponents for generalized polymer problems, *Journal de Physique (Paris) Lettres* **44**, L469-L471 (1980).
43. Lubensky, T.C., and Isaacson, J., Field theory and polymer size distribution for branched polymers, *Journal de Physique I* **42**, 175-188 (1981).
44. Harris, A.B., and Lubensky, T.C., Connection between percolation and lattice animals, *Physical Review B* **23**, 3591-3596 (1981).
45. Harris, A.B., and Lubensky, T.C., Generalized percolation, *Physical Review B* **24**, 2656-2670 (1981).
46. Harris, A.B., and Lubensky, T.C., Mean-field theory and ϵ -expansion for Anderson localization, *Physical Review B* **23**, 2640-2673 (1981).
47. Lubensky, T.C., and McKane, A.J., Cluster size distribution above the percolation threshold, *Journal of Physics A* **14**, L157-L161 (1981).
48. Lubensky, T.C., and McKane, A.J., Anderson localization, branched polymers and the Yang-Lee edge singularity, *Journal de Physique (Paris) Lettres* **42**, L331-L334 (1981).
49. Dunn, S.G., and Lubensky, T.C., Gauge-dependent critical properties of the nematic-to-smectic-A transition in the $1/N$ -expansion, *Journal de Physique I* **42**, 1201-1230 (1981).
50. Lubensky, T.C., Dunn, S.G., and Isaacson, J., Gauge transformations and the nematic-to-smectic-A transitions, *Physical Review Letters* **47**, 1609-1612 (1981).
51. Lubensky, T.C., Isaacson, J., and Obukhov, S.P., Field theory for ARB_2 branched polymers, *Journal de Physique I* **42**, 1591-1601 (1981).
52. Lubensky, T.C., and McKane, A.J., Correlations at the nematic-to-smectic-A critical point when $v_{\parallel} = 2v_{\perp}$, *Journal de Physique (Paris) Lettres* **43**, L217-L221 (1982).
53. Day, A.R., and Lubensky, T.C., ϵ -expansion for directed animals, *Journal of Physics A* **15**, L285-L290 (1982).
54. Lubensky, T.C., and Vannimenus, J., Flory approximation for directed branched polymers and directed percolation, *Journal de Physique (Paris) Lettres* **43**, L377-L381 (1982).
55. Lubensky, T.C., Grinstein, G, and Pelcovits, R.A., Gauge transformations and anharmonic effects in smectic liquid crystals, *Physical Review B* **25**, 6022-6025 (1982).
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58. Harris, A.B., and Lubensky, T.C., Field theoretic approaches to biconnectedness in percolating systems, *Journal of Physics A* **16**, L365-L373 (1983).
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63. Lubensky, T.C., Fluctuations in random walks with random traps, *Physical Review A* **30**, 2657-2665 (1984).
64. Wang, J., and Lubensky, T.C., Correlations and x-ray scattering in polar smectic- A_1 phases, *Journal de Physique I* **45**, 1653-1661 (1984).
65. Harris, A.B., Kim, S., and Lubensky, T.C., ϵ -expansion for the conductivity of a random resistor network, *Physical Review Letters* **53**, 743-746 (1984).
66. Harris, A.B. and Lubensky, T.C., Diluted spin models near the percolation threshold, *Journal of Physics A* **17**, L609-L614 (1984).
67. Day, A.R., and Lubensky, T.C., Gauge invariant de Gennes model, *Physical Review A* **30**, 481-487 (1984).
68. Barois, P., Prost, J., and Lubensky, T.C., New critical points in frustrated smectics, *Journal de Physique I* **46**, 391-399 (1985).
69. Levine, D., Lubensky, T.C., Ostlund, S., Ramaswamy, S., Steinhardt, P.J., and Toner, J., Elasticity and dislocations in pentagonal and icosahedral quasicrystals, *Physical Review Letters* **54**, 1520-1523 (1985).
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71. Lubensky, T.C., Ramaswamy, S., and Toner, J., Hydrodynamics of icosahedral quasicrystals, *Physical Review B* **32**, 7444-7452 (1985).
72. Lubensky, T.C., and Wang, J., The percolation conductivity exponent to second order in $\epsilon = 6 - d$, *Physical Review B* **33**, 4998-5009 (1986).
73. Achiam, Y., Lubensky, T.C., and Marshall, E.W., Ising model on a quasiperiodic chain, *Physical Review B* **33**, 6460-6464 (1986).
74. Grinstein, G., Lubensky, T.C., and Toner, J., Defect-mediated melting and new phases in three-dimensional systems with a single soft direction, *Physical Review B* **33**, 3306-3321 (1986).
75. Lubensky, T.C., Ramaswamy, S., and Toner, J., Dislocation motion in quasicrystals and implications for macroscopic properties, *Physical Review B* **33**, 7715-7719 (1986).
76. Park, Y., Harris, A.B., and Lubensky, T.C., Noise exponents of the random resistor network, *Physical Review B* **35**, 5048-5055 (1986).
77. Lubensky, T.C., and Tremblay, A.-M.S., ϵ -expansion for transport exponents of continuum percolating systems, *Physical Review B* **34**, 3408-3417 (1986); Comment on the conductivity exponent in continuum percolation, *Physical Review B* **37**, 7894-7895 (1988).
78. John, S., and Lubensky, T.C., Phase transitions in a disordered granular superconductor near percolation, *Physical Review B* **34**, 4815-4825, (1986).
79. Lubensky, T.C., Socolar, J.E.S., Steinhardt, P.J., Bancel, P.A., and Heiney, P.A., Distortions and peak broadening in quasicrystal diffraction patterns, *Physical Review Letters* **57**, 1440-1443 (1986).
80. Socolar, J.E.S., Lubensky, T.C., and Steinhardt, P.J., Phonons, phasons and dislocations in quasicrystals, *Physical Review B* **34**, 3345-3360 (1986).
81. Harris, A.B., and Lubensky, T.C., Potts-model formulation of the random resistor network, *Physical Review B* **35**, 6987-6996 (1987).
82. Harris, A.B., and Lubensky, T.C., Randomly diluted xy and resistor networks near the percolation threshold, *Physical Review B* **35**, 6964-6986 (1987).

83. Lubensky, T.C., Mean-field theory for the biaxial nematic phase and the $NN'AC$ critical point, *Molecular Crystals & Liquid Crystals* **146**, 55-69 (1987).
84. Aronovitz, J.A., and Lubensky, T.C., ϵ -expansion for self-avoiding tethered surfaces of fractional dimension, *Europhysics Letters* **4**, 395-401 (1987).
85. Park, Y., and Lubensky, T.C., New critical point in smectic liquid crystals, *Physical Review A* **37**, 2197-2213 (1988).
86. John, S., Lubensky, T.C., and Wang, J., Diamagnetism of percolative granular superconductors and diluted Josephson arrays, *Physical Review B* **38**, 2533-2542 (1988).
87. Renn, S.R., and Lubensky, T.C., Abrikosov dislocation lattice in a model of the cholesteric-to-smectic-A transition, *Physical Review A* **38**, 2132-2147 (1988).
88. Aronovitz, J.A., and Lubensky, T.C., Fluctuations of solid surfaces, *Physical Review Letters* **60**, 2634-2637 (1988).
89. Lubensky, T.C., Ramaswamy, S., and Toner, J., Static and dynamic properties of incommensurate smectic- A_{1C} liquid crystals, *Physical Review A* **38**, 4284-4298 (1988).
90. Golubović, L., and Lubensky, T.C., Smectic elastic constants of lamellar fluid membrane phases: crumpling effects, *Physical Review A* **39**, 12110-21133 (1989).
91. Aronovitz, J., Golubović, L., and Lubensky, T.C., Fluctuations and the lower critical dimension of crystalline membranes, *Journal de Physique I* **50**, 609-631 (1989).
92. Park, Y., Lubensky, T.C., and Prost, J., A new mean-field Sm-A--Sm-A' critical point in a symmetry breaking field, *Liquid Crystals* **4**, 435-440 (1989).
93. Aronovitz, J., and Lubensky, T.C., Crossover in randomly diluted classical two-dimensional Heisenberg magnets, *Journal of Physics A* **23**, 241-248 (1990).
94. Golubović, L., and Lubensky, T.C., Steric entropy and phase equilibria in microemulsions, *Europhysics Letters* **10**, 513-518 (1989).
95. Golubović, L., and Lubensky, T.C., Thermal fluctuations and phase equilibrium in microemulsions, *Physical Review E* **41**, 4343-4366 (1990).
96. Harris, A.B., Lubensky, T.C., and Mele, E.J., Flux phases in tight-binding models, *Physical Review B* **40**, 2631-2634 (1989).
97. Golubovic, L., and Lubensky, T.C., Nonlinear elasticity of amorphous solids, *Physical Review Letters* **63**, 1082-1085, (1989).
98. Lubensky, T.C., Prost, J., and Ramaswamy, S., Crumpling and second sound in lyotropic lamellar phases, *Journal de Physique I* **51**, 993-943 (1990).
99. Lubensky, T.C., and Renn, S.R., Twist-grain-boundary phases near the nematic-smectic-A-smectic-C point in liquid crystals, *Physical Review A* **41**, 4392-4401 (1990).
100. Morse, D.C., and Lubensky, T.C., Incommensurate flux phases on a square lattice, *Physical Review B* **42**, 7994-8007 (1990).
101. Morse, D.C., and Lubensky, T.C., Instabilities of the Fermi-liquid and staggered flux phases in the large- N t - J model, *Physical Review B* **43**, 10436-10444 (1991).
102. Renn, S.R., and Lubensky, T.C., Existence of a Sm-C grain boundary phase at the chiral NAC point, *Molecular Crystals & Liquid Crystals* **209**, 349-355 (1991).
103. Golubović, L., and Lubensky, T.C., Entropic elasticity of lamellar tethered membrane phases, *Physical Review A* **43**, 6793-6802 (1991).
104. Lubensky, T.C., Tokihiro, T., and Renn, S.R., Polymers in a chiral nematic liquid crystal: model for twist-grain-boundary phases, *Physical Review A* **43**, 5449-5462 (1991).
105. Lubensky, T.C., Tokihiro, T., and Renn, S.R., Quasicrystallinity in twist-grain-boundary phases, *Physical Review Letters* **67**, 89-92 (1991).
106. MacKintosh, F.C., and Lubensky, T.C., Orientational order, topology, and vesicle shapes, *Physical Review Letters* **67**, 1169-1172 (1991).
107. Morse, D.C., Lubensky, T.C., and Grest, G.S., Quenched disorder in tethered membranes, *Physical Review E* **45**, 2151-2154 (1991).

108. Lubensky, T.C., and Prost, J. Orientational order and vesicle shape, *Journal de Physique II* **23**, 371-382 (1992).
109. Morse, D.C., and Lubensky, T.C., Curvature disorder in tethered membranes: a new flat phase at $T = 0$, *Physical Review A* **46**, 1751-1768 (1992).
110. Park, J., Lubensky, T.C., and MacKintosh, F.C., n -atic order and continuous shapes changes of deformable surfaces of genus zero, *Europhysics Letters* **20**, 279-284 (1992).
111. Morse, D.C., Petsche, I.B., Grest, G.S., and Lubensky, T.C., Disorder in polymerized fluid membranes, *Physical Review A* **46**, 6745-6747 (1992).
112. Morse, D.C., and Lubensky, T.C., 2D crystalline order and defects in a stack of membranes, *Journal de Physique II* **3**, 531-546 (1993).
113. Ramaswamy, S., Prost, J., Cai, W., and Lubensky, T.C., Dynamics of lyotropic lamellar phases, *Europhysics Letters* **23**, 271-276 (1993).
114. Lubensky, T.C., and MacKintosh, F.C., Theory of the “ripple” phase of lipid bilayers, *Physical Review Letters* **71**, 1565-1568 (1993).
115. Pettey, D., and Lubensky, T.C., Star defects on flat and spherical surfaces, *Journal de Physique II* **3**, 1571-1579 (1993).
116. Kamien, R.D., and Lubensky, T.C., Twisted line liquids, *Journal de Physique I* **3**, 2131-2138 (1993).
117. Cai, W., and Lubensky, T.C., Covariant hydrodynamics of fluid membranes, *Physical Review Letters* **73**, 1186-1189 (1994).
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120. Chen, C.-M., Lubensky, T.C., and MacKintosh, F.C., Phase transitions and modulated phases in lipid bilayers, *Physical Review E* **51**, 504-513 (1995).
121. Sachidanandam, R., Lubensky, T.C., and Harris, A.B., Phenomenological dynamics of C_{70} , *Physical Review B* **51**, 12380-12397 (1995).
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132. Kamien, R.D., and Lubensky, T.C., Chiral lyotropic liquid crystals: TGB phases and helicoidal structures, *Journal de Physique II* **7**, 157-163 (1997).
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