CURRICULUM VITAE

NAME: *CHARLES REICHHARDT*

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CITIZENSHIP: United States.

EDUCATION:

The University of Michigan, Ann Arbor, MI.
Ph.D., 1998 Physics.
M.Sc., 1995 Physics.

University of California, Irvine, CA.
B.S., 1993 Physics, minor Mathematics.

PROFESSIONAL EMPLOYMENT:

Jan. 2003—	*Technical Staff Member* Theoretical Division, T-13, Complex Systems Los Alamos National Laboratory
Dec. 2000—Dec 2002	*Richard P. Feynman Distinguished Postdoctoral Fellow* Center for Nonlinear Studies and Applied Physics Division Los Alamos National Laboratory
1998—Nov. 2000	*Postdoctoral Researcher* Department of Physics, University of California, Davis.
Summers 2000—2003	*Visiting Scientist* Materials Science Division, Argonne National Laboratory, Argonne, Illinois.
1994—1998	*Graduate Researcher* Department of Physics, University of Michigan.
1992—1993	*Undergraduate Researcher* Department of Physics, University of California, Irvine.

RESEARCH INTERESTS:

Computational studies in condensed matter: soft matter, nanophysics, solid state, and complex systems.

HONORS:

Undergraduate Thesis: Control in Nonlinear Systems with Sequences of Pulses, 1993.
General Electric Graduate Fellowship, 1993-1994.
University of Michigan Rackham Graduate Fellowship, 1994-1998.
Passed PhD preliminary examination with distinction, 1995.
Nominated for Campus-wide Distinguished Dissertation Award, University of Michigan, 1998.
Director's Fellow, LANL, 2000.
Richard P. Feynman Distinguished Fellow, LANL, 2001-2003.
Distinguished Postdoctoral Team Award, LANL, 2004.
Research Achievement Award, Ratchet Cellular Automata, LANL, 2004.

PUBLICITY:

Work on *Vortex Dynamics* featured in:
APS News **5**, June 1996.
APS DMP Image Gallery webpage.
Work on *"Ratchet Cellular Automata"* [PRL **90**, 247004 (2003)] featured in:
Physical Review Focus, June 20, 2003.
Technology Research News, July 16/23, 2003.
LANL Director's Highlights, July 25, 2003.
LANL Theoretical Division Research Highlights 2003.

GRANTS:

2001: LDRD (LANL) "Statistical Properties of Granular Chains." With E. Ben-Naim.
2002: LDRD (Argonne) "Vortex Cellular Automata." With W.K. Kwok, B. Jankó, V. Metlushko.
2003-2006: LDRD-DR (LANL) "Statistical Physics of Infrastructure Networks." With Z. Toroczkai, E. Ben-Naim, M.B. Hastings.
2006-2009: LDRD-DR (LANL) "The Physics of Algorithms." With M. Chertkov.
2007-2010: LDRD-ER (LANL) "Critical and crossover behaviors at jamming transitions."

TEACHING EXPERIENCE:

1996—1997 University of Michigan Lab TA
8 sections of electricity and magnetism.

Fall 1999 University of California, Davis
Guest lecturer; graduate solid state course (2 weeks).

Graduate Students

John Wambaugh (Duke): Summer 2001; co-mentor: C. J. Olson
Project: *Ratchet induced segregation of non-spherical grains.*
Sofian Teber (U. Paris): Summer 2001; co-mentors: A. Bishop, C. J. Olson
Project: *Monte Carlo simulation of charged solitons.*
Dylan Manna (U. Michigan): Summer 2001; co-mentor: C. J. Olson
Project: *Two-species colloids in circular traps.*
Michael Mikulis (UC-Davis): Fall 2003; co-mentors: C.J. Olson Reichhardt and R. Scalettar
Project: *Reentrant disordering of colloidal molecular crystals.*
Jing-Xian Lin (UC-Riverside): Summer 2005; co-mentor: C.J. Olson Reichhardt
Project: *Heterogeneous melting of pinned colloids.*
Andras Libál (Notre Dame): Summer 2005-present; co-mentor: C.J. Olson Reichhardt
Project: *Dynamics, rectification, and fractionation for colloids on flashing substrates.*
Project: *Realizing colloidal artificial ice on arrays of optical traps.*

Project: *Point defect dynamics in two-dimensional colloidal crystals.*
Project: *Vortex configurations and dynamics in elliptical pinning sites for high matching fields.*
Project: *Enhancing mixing and diffusion with plastic flow.*

Qiming Lu (RPI): Summer 2006; co-mentor: C.J. Olson Reichhardt
Project: *Reversible vortex ratchet effects and ordering in superconductors with one-dimensional asymmetric potential arrays.*

N. Robert Hayre (UC-Davis): Summer 2007; co-mentor: C.J. Olson Reichhardt
Project: *Prions and pattern forming systems.*

Mew-Bing Wan (Washington Univ. St. Louis): Summer 2007; co-mentor: C.J.O. Reichhardt
Project: *Rectification of swimming bacteria and self driven particle systems by arrays of asymmetric barriers.*

Undergraduate Students

John Wambaugh (U. Michigan): 1997-8 REU; co-mentors: F. Nori, C. J. Olson
Project: *Superconducting fluxon pump and lenses.*

Amit Mehta (Cornell): 1998 REU; co-mentors: F. Nori, C. J. Olson
Project: *Horton analysis of riverlike networks of vortices.*

Omari Fuller (Contra Costa College): 1999 Minority Undergraduate Research Participation in the Physical Sciences; co-mentors: C. J. Olson, R. Scalettar
Project: *Atomic Friction.*

Rogelio Lepe (Sacramento City College): 1999 MURPPS; co-mentors: C. J. Olson, R. Scalettar
Project: *Threshold dynamics in spring-block models at the edge of motion.*

Yolanda Marchante-Ortiz (Solano Community College): 1999 MURPPS; co-mentors: C. J. Olson, R. Scalettar
Project: *Detection of non-visible planets by star perturbation.*

Carla Rivera (UC-Davis): 1999 MURPPS; co-mentors: C. J. Olson, R. Scalettar
Project: *Orbital stability and the three body problem.*

Jeff Drocco (Notre Dame): Summer 2003; co-mentors: C. J. Olson Reichhardt, B. Jankó
Project: *Melting of two-species charged clusters in a parabolic trap;*
Project: *Multiscaling at Point J: Jamming is a critical phenomenon.*

Niall Mangan (Clarkson): Summer 2007; co-mentor: C.J. Olson Reichhardt
Project: *Intermittency in ac driven vortices.*

PROFESSIONAL SERVICE:

Referee for Physical Review Letters, Physical Review B, Physical Review E, Europhysics Letters, Physica **B**, Physica **C**, Physica **D**, Physics Letters **A**, Reviews of Modern Physics, Nature, Journal of Physics B.

Referee (Grants) - National Science Foundation, Cortell Research Corporation, Petroleum Research Fund, Guggenheim Foundation.

Service: Co-organizer, CNLS 23rd Annual Conference on Networks: Structure, Dynamics and Function. Co-organizer, Third Summer Conference on Statistical Physics, July 26-Aug. 6, 2004 (LANL). CNLS Colloquium organizer, 2003-4. Member, T-13 group leader search committee, 2006.

COMPUTER EXPERIENCE:

Techniques: Parallel and serial computing techniques, molecular and Brownian dynamics, classical Monte Carlo, development of new measures for complex systems.

Languages: FORTRAN, C, MPI, HTML

Platforms and machines used: UNIX, Linux, MS-DOS, MS-WINDOWS; Sun workstations, IBM SP2, IBM RISC-6000, PCs, Macintosh.

INVITED TALKS:

1. *"Vortex dynamics in superconductors with periodic pinning arrays,"* Workshop on Computational Superconductivity, Argonne National Laboratory, March 24-26, 1996.

2. *"Commensurate and incommensurate vortex states in superconductors with periodic pinning arrays,"* Argonne National Laboratory, Oct. 20, 1997.

3. *"Dynamic phases in superconductors with periodic pinning arrays,"* Theoretical Physics Group seminar, McMaster University, March 11, 1998.

4. *"Vortex pinning and dynamics in superconductors with periodic pinning arrays,"* Campus-Laboratory Collaboration (CLC) on the Physics of Vortex Matter Meeting, University of California—Davis, Dec. 19-20, 1998.

5. *"Melting of moving vortex lattices interacting with periodic pinning arrays,"* CLC Meeting, University of California—Irvine, May 29, 1999.

6. *"Shapiro steps in driven vortex lattices in periodic pinning arrays,"* CLC Meeting, Los Alamos National Laboratory, Sept. 13-17, 1999.

7. *"Shapiro steps in driven vortex lattices in periodic pinning arrays,"* Conference on Vortex Matter at Extreme Scales and Conditions, Crete, Sept. 18-24, 1999.

8. *"Vortex pinning and dynamics in superconductors with rectangular pinning arrays,"* CLC Meeting, University of California—San Diego, Jan. 29-30, 2000.

9. *"Static and dynamic phases of vortex matter in superconductors with nanostructured arrays,"* Physics Department Colloquium, University of Missouri, Rolla, March 9, 2000.

10. *"Vortices freeze like window glass: the vortex molasses scenario,"* invited speaker for APS March Meeting, Minneapolis, March 23, 2000.

11. *"Static and dynamic phases of vortex matter in superconductors with nanostructured arrays,"* Physics seminar, Rensselaer Polytechnic Institute, March 31, 2000.

12. *"Hysteretic depinning and dynamical melting for magnetically interacting vortices,"* CLC Meeting, Los Alamos National Laboratory, Sept. 20-23, 2000.

13. *"Transverse phase locking of vortices interacting with periodic substrates,"* CLC Meeting, Lake Tahoe, Feb. 8-11, 2001.

14. *"Static and dynamic phases of vortex matter in nanostructured arrays,"* Physics Colloquium, Worcester Polytechnic University, March 22, 2001.

15. *"Ordering and dynamics of vortices and colloids on periodic substrates,"* CNLS Seminar, Los Alamos National Laboratory, April 15, 2001.

16. *"Static and dynamic vortex states in layered superconductors,"* Afternoon workshop on vortex matter, Gordon Research Conference - Condensed matter physics, Connecticut College, June 19, 2001.

17. *"Static and dynamic vortex states in layered superconductors,"* Seminar, Applied Superconductivity Center, University of Wisconsin, Madison, June 26, 2001.

18. *"Ordering and dynamics of vortices and colloids on periodic substrates,"* Seminar, Materials Science Division, Argonne National Laboratory, July 5, 2001.

19. *"Vortex pinball and rectification in systems with periodic pinning sites and crossed ac drives,"* VIII Vortex Physics Workshop, Bariloche, Argentina, Dec. 1, 2001.

20. *"Static and dynamic colloidal states on patterned substrates,"* Physics Colloquium, New Mexico State University, Jan. 30, 2002.

21. *"Static and dynamic colloidal states on patterned substrates,"* Physics Colloquium, Emory University, Feb. 12, 2002.

22. *"Static and dynamic colloidal states on patterned substrates,"* Physics Colloquium, Wesleyan University, Mar. 16, 2002.

23. *"Interference effects in 2D and 1D vortex matter in periodic pinning potentials with ac and dc drives,"* ESF Workshop on Structure and Arrangement of Vortices in Superconductors, Prague, Apr. 3, 2002.

24. *"Static and dynamic colloidal states on patterned substrates,"* Physics Seminar, Universität Konstanz, Apr. 6, 2002.

25. *"Dynamics and melting of stripes, bubbles, and crystals with quenched disorder,"* Condensed Matter Seminar, California Institute of Technology, May 6, 2002.

26. *"Dynamics and melting of stripes, bubbles, and crystals with quenched disorder,"* Condensed Matter Seminar, University of California - Davis, May 7, 2002.

27. *"Dynamics and melting of stripes, bubbles, and crystals with quenched disorder,"* Center for Nonlinear Studies Seminar, Los Alamos National Laboratory, May 22, 2002.

28. *"Static and dynamic colloidal states on patterned substrates,"* Materials Science Division Seminar, Argonne National Laboratory, June 12, 2002.

29. *"Novel colloidal states on patterned substrates,"* Physics Colloquium, University of Missouri - Columbia, Nov. 5, 2002.

30. *"Novel colloidal states on patterned substrates,"* Condensed Matter Seminar, Notre Dame, Nov. 8, 2002.

31. *"Transverse depinning of a driven elastic string in a disordered media,"* Miniworkshop on Dynamics In Assorted Systems, University of New Mexico, Nov. 15, 2002.

32. *"Static and dynamic colloidal states on patterned substrates,"* Physics Department Colloquium, North Dakota State University, Jan 27, 2003.

33. *"Static and dynamic colloidal states on patterned substrates,"* Condensed Matter and Statistical Physics Division Seminar, Los Alamos National Laboratory, Feb 4, 2003.

34. *"Investigating static and dynamic colloidal states using computer simulations,"* Physics Colloquium, Oregon State University, March 17, 2003.

35. *"Dynamics in superconducting and metallic nanostructures,"* Solid State Seminar, Oregon State University, March 18, 2003.

36. *"Dynamical states in superconducting and metallic nanostructures,"* Center for Nonlinear Studies Seminar, Los Alamos National Laboratory, April 24, 2003.

37. *"Equilibrium and non-equilibrium studies of colloids using computer simulations,"* Physics Seminar, Universität Stuttgart, Sept. 18, 2003.

38. *"Ratchets in nanostructured superconductors,"* 34th Winter Colloquium on The Physics of Quantum Electronics, Snowbird, Utah, Jan. 4, 2004.

39. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Physics Colloquium, University of Arizona, Jan. 23, 2004.

40. *"Ratchets in nanostructured superconductors,"* Arizona Days 2004, Los Alamos National Laboratory, Jan. 31, 2004.

41. *"Crystallization, melting and jamming in soft matter systems with external fields,"* Condensed Matter Physics Seminar, University of California–Irvine, April 28, 2004.

42. *"Pattern formation in systems with competing interactions: applications to materials science,"* Condensed Matter Physics Seminar, University of California–Davis, May 3, 2004.

43. *"Pattern formation in systems with competing interactions: applications to materials science,"* Materials Research Center Seminar, University of Chicago, May 11, 2004.

44. *"Crystallization, melting and jamming in soft matter systems with external fields,"* Condensed Matter Physics Seminar, Michigan State University, May 12, 2004.

45. *"Noise near charge ordering transitions,"* SPIE Second International Symposium on Fluctuations and Noise, Gran Canarias, Spain, May 25-28, 2004.

46. *"Crystallization, melting and jamming in soft matter systems with external fields,"* Physics Seminar, University of Antwerp (Campus Drie Eiken), June 2, 2004.

47. *"Statics and dynamics of colloidal particles in periodic traps,"* SPIE Conference on Optical Trapping and Optical Micromanipulation, Denver, Aug. 2-6, 2004.

48. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* CNLS Seminar, Los Alamos National Laboratory, Aug. 24, 2004.

49. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Condensed Matter Physics Seminar, Iowa State University, Sept. 24, 2004.

50. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Physics Colloquium, University of Iowa, Sept. 27, 2004.

51. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Condensed Matter Physics Seminar, Brandeis University, Oct. 6, 2004.

52. *"Pattern formation in systems with competing interactions: Superconductors, stripes, and checkerboards,"* Condensed Matter Physics Seminar, University of Florida, Oct. 25, 2004.

53. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Condensed Matter Physics Seminar, University of Central Florida, Oct. 28, 2004.

54. *"Pattern formation in systems with competing interactions: Superconductors, stripes, and checkerboards,"* Condensed Matter Physics Seminar, Florida State University, Oct. 29, 2004.

55. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Condensed Matter Physics Seminar, Syracuse University, Nov. 5, 2004.

56. *"Equilibrium and nonequilibrium states for colloids interacting with external fields,"* Condensed Matter Physics Seminar, New York University, Nov. 9, 2004.

57. *"Moving vortex lattices,"* Workshop on Correlated Electrons at High Magnetic Fields, Kibbutz Ein-Gedi, Israel, Dec. 19-22, 2004.

58. *"Crystallization, melting, and jamming in colloidal systems with external fields,"* Condensed Matter Physics Seminar, University of Colorado - Boulder, Jan. 20, 2005.

59. *"Crystallization, melting, and jamming in colloidal systems with external fields,"* Physics Colloquium, Colorado State University, Jan. 24, 2005.

60. *"Crystallization, melting, and jamming in colloidal systems with external fields,"* Physics Colloquium, Vanderbilt University, Jan. 27, 2005.

61. *"Transport and devices in nanoscale superconductors and metallic dot arrays,"* Condensed Matter Physics Seminar, Vanderbilt University, Jan. 28, 2005.

62. *"Crystallization, melting, and jamming in colloidal systems with external fields,"* Condensed Matter Physics Seminar, University of Minnesota, Feb. 10, 2005.

63. *"Colloidal molecular crystals,"* Center for Nonlinear Studies External Advisory Committee Meeting, Los Alamos National Laboratory, Feb. 26, 2005.

64. *"Charge ordering, heterogeneities, and noise: Implications for the 2D metal-insulator transition and superconductivity,"* T-11 Seminar, Los Alamos National Laboratory, April 11, 2005.

65. *"Pattern formation in systems with competing interactions: Stripes, checkerboards, and bubbles,"* Condensed Matter Physics Seminar, Indiana University, April 15, 2005.

66. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Condensed Matter Physics Seminar, Virginia Tech, Oct. 6, 2005.

67. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Applied Science Seminar, Harvard, Oct. 21, 2005.

68. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Mechanical Engineering Seminar, Yale, Oct. 26, 2005.

69. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Physics Colloquium, University of Ljubljana, Slovenia, Nov. 10, 2005.

70. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Physics Seminar, Ludwig Maximilian University, Munich, Germany, Nov. 14, 2005.

71. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Physics Seminar, University of Düsseldorf, Germany, Nov. 18, 2005.

72. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Physics Colloquium, Wayne State University, Feb. 17, 2006.

73. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Condensed Matter Physics Seminar, Florida State University, Feb. 21, 2006.

74. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Condensed Matter Physics Seminar, University of Massachusetts—Amherst, Mar. 2, 2006.

75. *"Colloids in external fields: Crystallization, melting, and dynamics,"* Condensed Matter Physics Seminar, University of Houston, Apr. 4, 2006.

76. *"Pattern formation in systems with competing interactions: Stripes, checkerboards, and bubbles,"* Materials Science and Engineering Seminar, Louisiana State University, Apr. 26, 2006.

77. *"Condensed matter physics models for molecular and nuclear physics,"* T-16 (Nuclear Physics) Group Seminar, Los Alamos National Laboratory, May 9, 2006.

78. *"Pattern formation in systems with competing interactions: Stripes, checkerboards, and bubbles,"* Physics Department Seminar, Northwestern University, May 12, 2006.

79. *"Vortex configurations and artificial spin ice in elliptical pinning sites,"* 11th International Workshop on Vortex Matter, Wroclaw, Poland, July 3-8, 2006.

80. *"Vortex ordering and ratchet effects in nanoscale superconductors with one dimensional asymmetric substrates,"* International Conference on Mesoscopic Superconductivity and Magnetism, Chicago, Illinois, Aug. 28-Sept. 1, 2006.

81. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of California - Davis, Oct. 19, 2006.

82. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of California - Santa Cruz, Oct. 20, 2006.

83. *"Colloids as a model system to explore complex matter,"* Chemistry Seminar, University of California - Los Angeles, Oct. 24, 2006.

84. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of California - Riverside, Oct. 25, 2006.

85. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of Southern California, Oct. 27, 2006.

86. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of Rochester, Feb. 12, 2007.

87. *"Colloids as a model system to explore complex matter,"* Physics Seminar, Cornell University, Feb. 13, 2007.

88. *"Colloids as a model system to explore complex matter,"* Physics Colloquium, Rensselaer Polytechnic Institute, Feb. 14, 2007.

89. *"Hysteresis and noise in stripe and clump forming systems,"* SPIE Conference, Noise and Fluctuations in Circuits, Devices and Materials, Florence, Italy, May 23, 2007.

90. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, University of Pittsburgh, Oct. 11, 2007.

91. *"Colloids as a model system to explore complex matter,"* Condensed Matter Physics Seminar, Washington University St. Louis, Oct. 15, 2007.

92. *"Colloids as a model system to explore complex matter,"* Physics Colloquium, St. Andrews University, Oct. 30, 2007.

93. *"Colloids as a model system to explore complex matter,"* Theoretical Physics Seminar, University of Manchester, Nov. 2, 2007.

94. *"Colloids as a model system to explore complex matter,"* Applied Mathematics Seminar, Imperial College, London, Nov. 6, 2007.

95. *"Colloids as a model system to explore complex matter,"* Nanoscience Seminar, Department of Physics, University of Bath, Nov. 7, 2007.

96. *"Colloids as a model system to explore complex matter,"* Theoretical Physics Seminar, Oxford University, Nov. 9, 2007.

97. *"Rectification of swimming bacteria and self driven particle systems by arrays of asymmetric barriers,"* Center for Nonlinear Studies Seminar, Los Alamos National Laboratory, Dec. 11, 2007.

CITATIONS: over 1500 (source: SciSearch)

REFEREED PUBLICATIONS:

1. **Microscopic derivation of magnetic-flux-density profiles, magnetization hysteresis loops, and critical currents in strongly pinned superconductors.**
   C. Reichhardt, C. J. Olson, J. Groth, S. Field, and F. Nori,
   Phys. Rev. B **52**, 10 441 (1995).

2. **Vortex plastic flow, local flux density, magnetization hysteresis loops, and critical current, deep in the Bose-glass and Mott-insulator regimes.**
   C. Reichhardt, C. J. Olson, J. Groth, S. Field, and F. Nori,
   Phys. Rev. B **53**, R8898 (1996).

3. **Vortex plastic motion in twinned superconductors.**
   J. Groth, C. Reichhardt, C. J. Olson, S.B. Field, and F. Nori,
   Phys. Rev. Lett. **77**, 3625 (1996).

4. **Spatio-temporal dynamics and plastic flow of vortices in superconductors with periodic arrays of pinning sites.**
   C. Reichhardt, J. Groth, C. J. Olson, S.B. Field, and F. Nori,
   Phys. Rev. B **54**, 16 108 (1996).

5. **Dynamic phases of vortices in superconductors with periodic pinning.**
   C. Reichhardt, C. J. Olson, and F. Nori,
   Phys. Rev. Lett. **78**, 2648 (1997).

6. **Plastic flow, voltage noise, and vortex avalanches in superconductors.**
   C. J. Olson, C. Reichhardt, J. Groth, S.B. Field, and F. Nori,
   Physica C **290**, 89 (1997).

7. **Superconducting vortex avalanches, voltage bursts, and vortex plastic flow: effect of the microscopic pinning landscape on the macroscopic properties.**
   C. J. Olson, C. Reichhardt, and F. Nori,
   Phys. Rev. B **56**, 6175 (1997).

8. **Fractal networks, braiding channels, and voltage noise in intermittently flowing rivers of quantized magnetic flux.**
   C. J. Olson, C. Reichhardt, and F. Nori,
   Phys. Rev. Lett. **80**, 2197 (1998).

9. **Commensurate and incommensurate vortex states in superconductors with periodic pinning arrays.**
   C. Reichhardt, C. J. Olson, and F. Nori,
   Phys. Rev. B. **57**, 7937 (1998).

10. **Nonequilibrium dynamic phases and plastic flow of driven vortex lattices in superconductors with periodic arrays of pinning sites.**
    C. Reichhardt, C. J. Olson, and F. Nori,
    Phys. Rev. B **58**, 6534 (1998).

11. **Nonequilibrium dynamic phase diagram for vortex lattices.**
    C. J. Olson, C. Reichhardt, and F. Nori,
    Phys. Rev. Lett. **81**, 3757 (1998).

12. **Phase locking, Devil's staircase, Farey trees, and Arnold tongues in driven vortex lattices with periodic pinning.**
    C. Reichhardt and F. Nori,
    Phys. Rev. Lett. **82**, 414 (1999).

13. **Topological invariants in microscopic transport on rough landscapes: morphology, hierarchical structure, and Horton analysis of riverlike networks of vortices.**
    A. P. Mehta, C. Reichhardt, C. J. Olson, and F. Nori,
    Phys. Rev. Lett. **82**, 3641 (1999).

14. **Comment on "Peak effect and the transition from elastic to plastic depinning."**
    C. Reichhardt, K. Moon, R. Scalettar, and G. Zimányi,
    Phys. Rev. Lett. **83**, 2282 (1999).

15. **Superconducting fluxon pumps and lenses.**
    J. F. Wambaugh, C. Reichhardt, C. J. Olson, F. Marchesoni, and F. Nori,
    Phys. Rev. Lett. **83**, 5106 (1999).

16. **Dynamic vortex phases and pinning in superconductors with twin boundaries.**
    C. Reichhardt, C. J. Olson, and F. Nori,
    Phys. Rev. B **61**, 3665 (2000).

17. **Transverse depinning in strongly driven vortex lattices with disorder.**
    C. J. Olson and C. Reichhardt,
    Phys. Rev. B **61**, R3811 (2000).

18. **Vortices freeze like window glass: the Vortex Molasses scenario.**
C. Reichhardt, A. van Otterlo and G. T. Zimányi,
Phys. Rev. Lett. **84**, 1994 (2000).

19. **Phase-locking of vortex lattices interacting with periodic pinning.**
C. Reichhardt, R. T. Scalettar, G. T. Zimányi, and N. Grønbech-Jensen,
Phys. Rev. B **61**, R11914 (2000).

20. **Melting of moving vortex lattices in systems with periodic pinning.**
C. Reichhardt and G. T. Zimányi,
Phys. Rev. B **61**, 14354 (2000).

21. **Collective multi-vortex states in periodic arrays of traps.**
C. Reichhardt and N. Grønbech-Jensen,
Phys. Rev. Lett. **85**, 2372 (2000).

22. **Critical currents and vortex states at fractional matching fields in superconductors with periodic pinning.**
C. Reichhardt and N. Grønbech-Jensen,
Phys. Rev. B **63**, 054510 (2001).

23. **Moving Wigner glasses and smectics: dynamics of disordered Wigner crystals.**
C. Reichhardt, C.J. Olson, N. Grønbech-Jensen, and F. Nori,
Phys. Rev. Lett. **86**, 4354 (2001).

24. **Complex dynamical flow phases and pinning in superconductors with rectangular pinning arrays.**
C. Reichhardt, G.T. Zimányi, and N. Grønbech-Jensen,
Phys. Rev. B **64**, 014501 (2001).

25. **Critical depinning force and vortex lattice order in disordered superconductors.**
C.J. Olson, C. Reichhardt, and S. Bhattacharya,
Phys. Rev. B **64**, 024518 (2001).

26. **Individual and multiple vortex pinning in systems with periodic pinning arrays.**
C. Reichhardt, G.T. Zimányi, R.T. Scalettar, A. Hoffmann, and I.K. Schuller,
Phys. Rev. B **64**, 052503 (2001).

27. **Phase-locking of driven vortex lattices with transverse ac force and periodic pinning.**
C. Reichhardt, A.B. Kolton, D. Domínguez, and N. Grønbech-Jensen,
Phys. Rev. B **64**, 134508 (2001).

28. **Hysteretic depinning and dynamical melting for magnetically interacting vortices in disordered layered superconductors.**
C.J. Olson, C. Reichhardt, and V.M. Vinokur,
Phys. Rev. B **64**, 140502(R) (2001).

29. **Commensurate and incommensurate vortex lattice melting in periodic pinning arrays.**
C. Reichhardt, C.J. Olson, R. T. Scalettar, and G. T. Zimányi,
Phys. Rev. B **64**, 144509 (2001).

30. **Collective interaction-driven ratchet for transporting flux quanta.**
C.J. Olson, C. Reichhardt, B. Jankó, and F. Nori,
Phys. Rev. Lett. **87**, 177002 (2001).

31. **Ratchet-induced segregation and transport of non-spherical grains.**
J.F. Wambaugh, C. Reichhardt, and C.J. Olson,
Phys. Rev. E **65**, 031308 (2002).

32. **Transverse depinning of a driven elastic string in disordered media.**
C. Reichhardt and C.J. Olson,
Phys. Rev. B **65**, 094301 (2002).

33. **Vortex pinball under crossed ac drives in superconductors with periodic pinning arrays.**
C. Reichhardt and C.J. Olson,
Phys. Rev. B. **65**, 100501(R) (2002).

34. **Effect of grain anisotropy on ordering, stability, and dynamics in granular systems.**
C.J. Olson, C. Reichhardt, M. McCloskey, and R.J. Zieve,
Europhys. Lett. **57**, 904 (2002).

35. **Transverse phase locking for vortices in square and triangular pinning arrays.**
C. Reichhardt and C.J. Olson,
Phys. Rev. B **65**, 174523 (2002).

36. **Novel colloidal crystalline states on two dimensional periodic substrates.**
C. Reichhardt and C.J. Olson,
Phys. Rev. Lett. **88**, 248301 (2002).

37. **Rectification and phase locking for particles on two dimensional periodic substrates.**
C. Reichhardt, C.J. Olson, and M.B. Hastings,
Phys. Rev. Lett. **89**, 024101 (2002).

38. **Colloidal dynamics on disordered substrates.**
C. Reichhardt and C.J. Olson,
Phys. Rev. Lett. **89**, 078301 (2002).

39. **Dynamical behaviors of quasi-one-dimensional vortex states: Possible applications to the vortex chain state.**
C. Reichhardt and C.J. Olson Reichhardt,
Phys. Rev. B **66**, 172504 (2002).

40. **Disordering transitions in vortex matter: Peak effect and phase diagram.**
C.J. Olson, C. Reichhardt, R.T. Scalettar, G.T. Zimányi, and N. Grønbech-Jensen,
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41. **Dynamical ordering of driven stripe phases in quenched disorder.**
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