

John P. Carini
Curriculum Vitae
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Address Department of Physics, Swain Hall-West 117,
Indiana University, Bloomington, IN 47405

Phone (812) 855-4359

Email jcarini@indiana.edu

Web <http://www.indiana.edu/~iubphys/research/faculty/Carini.shtml>

Education

B.A. Physics with Honors, University of Chicago, 1980

Ph.D. Physics, University of Chicago, 1988

Advisor: Prof. Sidney R. Nagel

Professional Employment

Research physicist, Department of Physics and Solid State Science Center
University of California, Los Angeles

Advisor: Prof. George Grüner

October 1986–August 1988

Chester Davis Fellow, Department of Physics

Indiana University, Bloomington

October 1988–July 1989

Assistant Professor, Department of Physics

Indiana University, Bloomington

August 1989–June 1995

Associate Professor, Department of Physics

Indiana University, Bloomington

July 1995–present

Honors and Awards

National Merit Scholar, University of Chicago, 1976–80

Exxon Graduate Fellowship, University of Chicago, 1981

Summer Faculty Fellowship, Indiana University, 1991

Alfred P. Sloan Foundation Fellowship, Indiana University, 1991-93

Research Area

Experimental condensed matter physics, concentrating on the dynamics in disordered materials.

Book

Binding and Scattering in Two-Dimensional Systems: Applications to Quantum Wires, Waveguides, and Photonic Crystals, J. T. Londergan, J. P. Carini, and D. P. Murdock, Springer Lecture Notes in Physics, volume m60 (Berlin: Springer-Verlag 1999).

Refereed publications

1. Thermoelectric power of metallic glasses, J. P. Carini, S. Basak and S. R. Nagel, J. Phys. (Paris) Colloq. **41**, C8-463-467 (1980). Research article.
2. The thermoelectric power of the metallic glass $\text{Ca}_{0.8}\text{Al}_{0.2}$, J. P. Carini, S. Basak, S. R. Nagel, B. C. Giessen and C. L. Tsai, Phys. Lett. **81A**, 525-526 (1981). Research article.
3. Electrical transport in amorphous $\text{Ni}_{1-x}\text{P}_x$ alloys, J. P. Carini, S. R. Nagel, L. K. Varga and T. Schmidt, Phys. Rev. B **27**, 7589-99 (1983). Research article.
4. Origin of the Bohm-Aharonov effect with half-flux quanta, J. P. Carini, K. A. Muttalib and S. R. Nagel, Phys. Rev. Lett. **53**, 102-105 (1984). Research article.
5. Periodicity of transport coefficients with half-flux quanta in the Aharonov-Bohm effect, D. A. Browne, J. P. Carini, K. A. Muttalib and S. R. Nagel, Phys. Rev. B **30**, 6798-6801 (1984). Research article.
6. Half-flux periodicity in arrays, D. A. Browne, J. P. Carini and S. R. Nagel, Phys. Rev. Lett. **55**, 136 (1985). Comment.
7. Flux quantization in rings, cylinders and arrays, J. P. Carini, D. A. Browne and S. R. Nagel, in *Localization and Metal-Insulator Transitions*, edited by H. Fritzsche and D. Adler (Plenum, New York, 1985), pages 281-294. Invited review article.
8. Effect of weak uniform frustration on the resistive transition in a Josephson junction array, J. P. Carini, S. R. Nagel, R. Levi-Setti, Y. -L. Wang, J. Chabala, and G. Crow, Solid State Comm. **65**, 977-980 (1988). Research article.
9. Magnetic-flux dependence of the resistive transition in a square Josephson-junction array, J. P. Carini, Phys. Rev. B **38**, 63-73 (1988). Research article.
10. Millimeter-wave surface resistance in highly oriented $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ films, J. P. Carini, A. Awasthi, G. Grüner, T. Hylton, K. Char, and M. R. Beasley, Phys. Rev. B **37**, 9726-29 (1988). Research article.
11. Millimeter-wave surface impedance measurements of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ ceramic superconductors, A. M. Awasthi, J. P. Carini, B. Alavi, and G. Grüner, Solid State Comm. **67**, 373-376 (1988). Research article.
12. Weakly coupled grain model of high frequency losses in high- T_c superconducting thin films, T. L. Hylton, A. Kapitulnik, M. R. Beasley, J. P. Carini, L. Drabeck, and G. Grüner, Appl. Phys. Lett. **53**, 1343-46 (1988). Research article.
13. Frequency dependent transport in heavy fermion systems, W. P. Beyermann, A. M. Awasthi, J. P. Carini, and G. Grüner, J. Mag. and Magn. Mat. **76-77**, 207-212 (1988). Invited research article.

14. Power-law temperature dependence of the electrodynamic properties in oriented $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ and $\text{Y}_2\text{Ba}_4\text{Cu}_8\text{O}_{16-\delta}$ films, L. Drabeck, J. P. Carini, G. Grüner, T. Hylton, K. Char, and M. R. Beasley, *Phys. Rev. B* **39**, 785-788 (1989). Research article.
15. Superconducting state properties of the high T_c oxides: penetration depth and surface impedance, J. P. Carini and G. Grüner, *Physica Scripta* **T25**, 72-77 (1989). Research article.
16. The surface impedance of high T_c superconductors, J. P. Carini, L. Drabeck, and G. Grüner, *Mod. Phys. Lett. B* **3**, 5-13 (1989). Research article.
17. Surface impedance studies of the high- T_c oxide superconductors YBaCuO , BiCaSrCuO , T. L. Hylton, M. R. Beasley, A. Kapitulnik, J. P. Carini, L. Drabeck, G. Grüner, *IEEE Trans. Magn.* **25**, 810-813 (1989).
18. Relaxation-time enhancement in the heavy fermion systems CePd_3 and UPt_3 , A. M. Awasthi, W. P. Beyermann, J. P. Carini, and G. Grüner, *Phys. Rev. B* **39**, 2377-90 (1989). Research article.
19. Scaling in the relaxation of super-cooled liquids, P. K. Dixon, L. Wu, S. R. Nagel, B. D. Williams, and J. P. Carini, *Phys. Rev. Lett.* **65**, 1108-11 (1990). Research article.
20. Dixon *et al.* reply, P. K. Dixon, L. Wu, S. R. Nagel, B. D. Williams, and J. P. Carini, *Phys. Rev. Lett.* **66**, 960 (1991). Reply to comment of R. V. Chamberlin.
21. Relaxation spectroscopies of viscous liquids, L. Wu, P. K. Dixon, S. R. Nagel, B. D. Williams, and J. P. Carini, *Journal of Non-Crystalline Solids* **131-133**, 32-36 (1991). Research article.
22. Wide-frequency dielectric susceptibility measurements in glycerol, N. Menon, K. P. O'Brien, P. K. Dixon, Lei Wu, S. R. Nagel, B. D. Williams, J. P. Carini, in *Optical properties of disordered solids. A collection of papers on the occasion of the 70th birthday of Jan Tauc*, J. Non-Cryst. Solids **141**, 61-65 (1992). Research article.
23. Bound states and resonances in waveguides and 'quantum wires,' John P. Carini, J. T. Londergan, K. Mullen, and D. P. Murdock, *Phys. Rev. B* **46**, 15538-41 (1992). Research article.
24. High frequency magnetoconductivity of disordered copper films, by G. U. Sumanasekera, B. D. Williams, D. V. Baxter, and J. P. Carini, *Solid State Comm.* **85**, 941-944 (1993). Research article.
25. Multiple bound states in sharply bent waveguides, J. P. Carini, J. T. Londergan, K. Mullen, and D. P. Murdock, *Phys. Rev. B* **48**, 4503-4515 (1993). Research article.
26. Effects of weak localization and superconducting fluctuations on the frequency dependence of the conductivity of copper-semiconductor sandwiches, by G. U. Sumanasekera, B. D. Williams, D. V. Baxter, and J. P. Carini, *Phys. Rev. B* **50**, 2606-21 (1994). Research article.
27. Transport anisotropy and dimensional crossover in Ag/Ge multilayers, D. V. Baxter, G. Sumanasekera, and J. P. Carini, *J. Mag. Mat.* **156**, 359-361 (1996). Research article.
28. Conductivity studies of quantum-critical dynamics, J. P. Carini, H.-L. Lee, and D. V. Baxter, *Ferroelectrics* **176**, 239-247 (1996). Research article.

29. Continuous quantum phase transitions, S. L. Sondhi, S. M. Girvin, J. P. Carini, and D. Shahar, *Rev. Mod. Phys.* **69**, 315–333 (1997). RMP Colloquium article.
30. Bound states in waveguides and bent quantum wires, I: Applications to waveguide systems, J. P. Carini, J. T. Londergan, D. P. Murdock, D. Trinkle, and C. S. Yung, *Phys. Rev.* **B55**, 9842–9851 (1997). Research article.
31. Bound states in waveguides and bent quantum wires, II: Electrons in quantum wires, J. P. Carini, J. T. Londergan, and D. P. Murdock, *Phys. Rev.* **B55**, 9852–9858 (1997). Research article.
32. Quantum-critical dynamics at the metal-insulator transition for amorphous niobium-silicon, H.-L. Lee, J. P. Carini, D. V. Baxter, G. Grüner, *Phys. Rev. Lett.* **80**, 4261-4 (1998). Research article.
33. Quantum-Critical Conductivity Scaling for a Metal-Insulator Transition, H.-L. Lee, J.P. Carini, D.V. Baxter, W. Henderson, and G. Grüner, *Science* **287**, 633-6 (2000). Research article.
34. Frequency scaling of microwave conductivity in the integer quantum Hall minima, R. M. Lewis and J. P. Carini, *Phys. Rev. B* **64**, 073310 (2001). Research article.
35. Measurements of the Complex Conductivity of $\text{Nb}_x\text{Si}_{1-x}$ Alloys on the Insulating Side of the Metal-Insulator Transition, E. Helgren, G. Grüner, M. Ciofalo, D. V. Baxter, J. P. Carini, *Phys. Rev. Lett.* **87**, 116602 (2001). Research article.
36. Solid Polymer Single-Ion Conductors: Synthesis and Properties, Lyudmila M. Bronstein, Robert L. Karlinsey, Barry Stein, Zheng Yi, John Carini, and Josef W. Zwanziger, *Chemistry of Materials* **18**, 708–715 (2006). Research article.
37. Improved performance of Li hybrid solid polymer electrolyte cells, G. Nagasubramanian, L. Bronstein, and J. Carini, *Journal of Power Sources* **162**, 847–850 (2006). Research article.
38. Composite solid polymer electrolytes based on pluronics: Does ordering matter?, L. M. Bronstein, R. L. Karlinsey, Z. Yi, J. Carini, U. Werner-Zwanziger, P. V. Konarev, D. I. Svergun, A. Sanchez, S. Khan, *Chemistry of Materials*, **19**, 6258-6265 (2007).
39. Measurement of linear-response Coulomb drag in insulating $a - \text{Si}_{1-x}\text{Nb}_x$ bilayer systems, K. Elsayad, J. P. Carini, and D. V. Baxter. *Solid State Communications* **148**, 261-266 (2008).