Name Barry Friedman
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Degrees Earned
Degree, Major, (minor – optional), Institution, Year

Ph.D., Physics, *UNIVERSITY of ILLINOIS*, Urbana, Illinois, 1985.
B.A., Physics, *RICE UNIVERSITY*, Houston, Texas, 1978.

Professional Licensure and Certifications

Peer-Review Publications and Artistic Performances/Exhibitions

Articles

1. B. Friedman, V. R. Pandharipande, "Hot and Cold, Nuclear and Neutron Matter", Nuclear Physics A 361, 502 (1981).

2. B. Friedman, V. R. Pandharipande and Q. N. Usmani, "Very Hot Nuclear Matter and Pion Production in Relativistic Heavy-Ion Collisions", Nuclear Physics A 372, 483 (1981).

3. B. Friedman and V. R. Pandharipande, "The Single Paricle Potential in Nuclear Matter", Phys. Lett. B 100, 205 (1981).

4. Q. N. Usmani, B. Friedman, and V. R. Pandharipande, "Scaling Approximation for the Elementary Diagrams in Hypernetted Chain Calculations," Phys. Rev. B 25, 4502 (1982).

5. B. Friedman, Y. Oono and I. Kubo, "Universal Behavior of Sinai Billiards Systems in the Small Scatterer Limit", Phys. Rev. Lett. 52, 709 (1984).

6. B. Friedman and R. F. Martin, Jr., "Decay of the Velocity Autocorrelation Function for the Periodic Lorentz Gas", Phys. Lett. A 105, 23 (1984).

7. B. Schaub, B. Friedman and Y. Oono, "Time-Dependent Correlations of a Self-Avoiding Polymer Chain", Phys. Lett. A 110, 136 (1985).

8. B. Friedman and C. Tresser, "Comb Structure in Hairy Boundaries: Some Transition Problems for Circle Maps", Phys. Lett. A 117, 15 (1986).

9. B. Friedman and B. O'Shaughnessy, "A Stochastic Quantization Study of the Edwards Hamiltonian", J. Phys. A; Math. Gen. 20 L25-28 (1987).

10. B. Friedman and R. F. Martin, Jr., "Behavior of the Velocity Autocorrelation Function for the Periodic Lorentz Gas" Physica D 30, 219 (1988).

11. B. Friedman and B. O'Shaughnessy, "Universal Behavior in Reacting Polymer Systems", Phys. Rev. Lett. 60, 64 (1988).

12. B. Friedman and Y. Rabin, "A Fluctuating Hydrodynamics Approach to Dilute Polymer Solutions: Solvent Velocity Correlations and Weak Flow." J. Chem. Phys. 87 (12), 7261 (1987).

13. B. Friedman and B. O'Shaughnessy, "Theory of Polymer Cyclization", Phys. Rev. A. 40 5950 (1989).

14. B. Friedman, "The Physics of Pinball Machines", Physics Bulletin August (1988).

15. B. Friedman and W. P. Su "Quantum Lattice Fluctuations and Optical Properties of Nondegenerate Conjugated Polymers" Phys. Rev. B 39, 5152 (1989).

16. J. Yu, B. Friedman, P. R. Baldwin and W. P. Su "Hyperpolarizabilities of Conjugated Polymers" Phys. Rev. B 39, 12814 (1989).

17. B. Friedman, X. Y. Chen, and W. P. Su "Validity of the Strong Coupling Expansion of the Two Dimensional Hubbard Model " Phys. Rev. B. 40, 4431 (1989).

18. B. Friedman and B. O'Shaughnessy "Short Time Behavior and Universal Relations in Polymer Cyclization" J. Phys. II 1, 471 (1991).

19. B. Friedman "A Weak Coupling Expansion for the Two Dimensional Hubbard Model on Square Clusters" Europhys. Lett., 14 (5), pp 495-500 (1991).

20. B. Friedman "Polarons in C_{60}" Phys. Rev. B. 1454 (1992).

21. G. Levine, B. Friedman, and W. P. Su "An Effective Hamiltonian for the Weak Coupling Hubbard Model near Half-filling" Phys. Rev. B 46, 8421 (1992).

22. B. Friedman, G. Levine, and B. O'Shaughnessy "A Study of Field Theoretic A+A in Two Dimensions" Phys. Rev. A 46 R7343 (1992).

23. B. Friedman and B. O'Shaughnessy "Irreversible Intramolecular Reactions Kinetics in Polymeric Liquids" Europhys. Lett. 21, 779 (1993).

24. B. Friedman and Jaewan Kim "Estimate of Hubbard U for C_{60} by Use of Optical Absorption" Phys. Rev. B 46, 8638 (1992).

25. B. Friedman and K. Harigaya "Quantum Lattice Fluctuations and Luminescence in C_{60}" Phys. Rev. B 47, 3975 (1993).

26. B. Friedman "Some Optical Properties of C_{60}" Proceedings of the NATO Advanced Study Institute, Chemical Physics of Intercalation II" Plenum Press, New York, p223 (1993).

27. B. Friedman "Electronic Absorption Spectra in C_{60}^- and C_{60}^+" Phys. Rev. B 48, 2743 (1993).

28. B. Friedman and B. O'Shaughnessy "Intermolecular Reactions in Dilute Polymer Solutions: Nonexistence of Diffusion Controlled Limit" Europhys. Lett. 23 (9) pp 667-672 (1993).

29. B. Friedman and B. O'Shaughnessy "Theory of Intramolecular Reactions in Polymeric Liquids", Macromolecules 26, 4888 (1993).

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31. B. Friedman and B. O'Shaughnessy "Renormalization Group Theory of Intramolecular Reactions in Polymeric Liquids" J. de Physique II (Paris) 3, 1657 (1993).

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33. B. Friedman “Some Remarks on Infrared Absorption of C_{60}” Mol. Cryst. Liq. Cryst. 256, 251 (1994).

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35. B. Friedman and R. Q. Luo “Low Energy Electronic Absorption of C_{60}^-” Phys. Rev. B 51 7916 (1995).

36. B. Friedman and G. Levine, "Low Energy Properties of the Two Dimensional Hubbard Model Near Half-Filling", Phys. Rev. B 52, 11752 (1995).

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38. B. Friedman, "A Density Matrix Renormalization Group Approach to Interacting Quantum Systems on Cayley Trees", J. Phys. C 9 (1997) 9021-9029.

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44. K. Lee, W. Wang, I. Iguchi, B. Friedman, T. Ishibashi and K. Sato, "Spin-Polarized Quasiparticle Tunnel Injection in a $YBa_2Cu_3O_y$/Au/Co Junction" Appl. Phys. Let. 75, 1149 (1999).

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47. Yukihiro Shimoi and Barry A. Friedman, "Ab Initio Study on the Structural and Optical Properties of Phenylacetylene Molecules", Nonlinear Optics, 2000, Vol. 26, pp169-176.

48. [D. N. Sheng], [Ziqiang Wang], and B. Friedman, “The role of disorder in half-filled high Landau levels”, Phys. Rev. B **66**, 161103 (2002).

49. B. Friedman, “Quantum Solitons in $CuGeO_3$: A Density Matrix Renormalization Group Study”, J. Phys.:Condens. Matter **14**, 4621 (2002).

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51. [J. E],[S. Kim],[E. Lim],[K. Lee],[D. Cha], and B. Friedman, “Effects of substrate temperature on copper(II) phthalocynanine thin films”, Applied Surface Science 205, p274-279 (2002).

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55. J. Dumoit and B. Friedman "Symmetry breaking by periodic potentials in quantum Hall systems", J. Phys.:Condens. Matter 16 (2004) 3663-3670.

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58. Chuck Yeung and B. Friedman "Cyclization of Rouse Chains at Long and Short Time Scales", J. of Chem. Phys. **122**, 214909 (2005).

59. B. Friedman, M. A. Gaspar, S. Kalachikov, K. Lee, R. Levicky, G. Shen, H. Yoo, "Sensitive, Label-Free DNA Diagnostics Based on Near-Field Microwave Imaging" *J. Am. Chem. Soc.;* **(Communication); 2005**; *127*(27); 9666-9667.

60. B. Friedman and B. McCarty "The effect of disorder on symmetry breaking in quantum hall systems", J. Phys.: Condens. Matter 17 (2005) 7335-7344.

61. C. Yeung and B. Friedman "Relation between cyclization of polymers with different initial conditions", Europhys. Lett. 73 (4) p621 (2006).

62. B. Friedman and C. Yeung "Renormalization Group Analysis of Polymer Cyclization with Non-equilibrium Initial Conditions" European Physical Journal E 21 (1) p25 (2006).

63. A. F. Izmaylov, A. Goker, B. A. Friedman and P. Nordlander, "Transient Current in a Quantum Dot Subject to a Change in Coupling to its Leads", 2006 *J. Phys.: Condens. Matter* **18** 8995-9006.

64. S. Yun, S. Na, A. Babayan, H. Kim, B. Friedman and K. Lee, " Noncontact Characterization of Sheet Resistance of Indium Tin Oxide Films by Using a Near-Field Microwave Microprobe", Thin Solid Films 515 (2006) 1354-1357.

65. A. Babajanyan, J. Kim, S. Kim, K. Lee and B. Friedman "Sodium Chloride Sensing by Using a Near-Field Microwave Microprobe", Appl. Phys. Lett. **89**, 183504 (2006)

66. A. Goker, B. A. Friedman and P. Nordlander, "Transient Current in a Quantum Dot Asymmetrically Coupled to Metallic Leads", 2007 J. Phys.: Condens. Matter 19 376206.

67. B. Friedman and C. Withrow, “Stripes or an Anisotropic Crystal in the N=2 Landau Level? “, Physica B to be published.

68. P. Chow and B. Friedman “Low Energy non-resonant X-ray Scattering of C60”, Phys. Rev. B to be published.

Books

Chapters

Proceedings

Artistic Performances

Artistic Exhibitions

Research Monographs and Technical Reports

Funded External Grants

[2007-2010] “RUI: Density Matrix Renormalization Group Studies of Quantum Hall Systems” National Science Foundation, $126000.

[2006-2008] “ A Computational Study of Strongly Correlated Electron States in High Landau Levels” Texas Advanced Research Program (ATP) $70000.

[2003-2006] “ New Approaches to Ground State and Transport Properties of Strongly Correlated Two dimensional Electron Systems” National Science Foundation,co-PI, (PI is Professor D. Sheng, California State University, Northridge) $96000.

[1998-1999] "Nonadiabatic Processes and Electron Correlation in Low Dimensional Systems", National Science Foundation, (Long-term Visit for Individual Research Projects to Japan) $109,000.

[1998-1999] "Novel Consequences of Topological Zero Modes in Unconventional High-T_c Superconductors", Texas Advanced Research Program, co-PI, (PI is Professor C. R. Hu, Texas A & M) $36,000.

[1995-1997] "Theory of Photo Induced Charge Transfer in Conducting Polymer C_{60} Composites", Research Corporation $21,000,

Peer-Review Presentations/Posters

Work or Professional Experiences

[9/98-9/99] *Visiting Scientist*, Electrotechnical Laboratory, Tsukuba, Japan, Host: S. Abe.

[1/90-9/90] *Japan Society for the Promotion of Science Fellow*, Institute for Solid State Physics of the University of Tokyo, Tokyo, Japan, Host: M. Kohmoto.

[1/88-9/89] *Postdoctoral Research Associate*, Physics Department, University of Houston, Houston, Texas, supervisor: W. P. Su.

[10/87-11/87] *Visiting Scientist*, Theoretical Condensed Matter, Cavendish Laboratory, Cambridge University, Cambridge England.

[10/85-10/87] *Bantrell Postdoctoral Fellow*, Chemical Physics Department, Weizmann Institute, Rehovot, Israel, supervisor: I. Procaccia.

Honors and Awards

Other Competencies