

Education:

B.Sc., Tel-Aviv University, Physics, 1976
M.Sc., Tel-Aviv University, Mathematical- Physics, 1980
Ph.D., Tel-Aviv University, Mathematical- Physics, 1984

Positions:

Assistant, Tel-Aviv University, 1978-83
Visiting Scholar, University of Bourgogne, France, 1981
Postdoctoral Fellow, Weizmann Institute, 1984
Weizmann Fellow, California Institute of Technology, 1985-1986
Bantrell Fellow, California Institute of Technology, 1987
Assistant Professor, Princeton University, 1987-1993
Associate Professor, Rutgers University, 1993-2000
Professor 2000 -2006 Rutgers University
Professor II, 2006 - Rutgers University
Institute of Advanced Study, Princeton Member, 2003-2004
Visiting Professor - University Cergy-Pontoise, France 2004, 2005, 2006
Visiting Professor - Technion, Israel, 2007
Weston Professor-Weizmann Institute, 2008
Visiting Professor, IHES, France, 2008
Visiting Professor-Univ Paris Sud, Orsay-2008
Visiting Professor, IHES, France 2009
Visiting Professor, Ecole Polytechnique, France 2009

Awards and Prizes:

Weston Fellowship - Weizmann Institute, 2007 - 2008
International Congress of Mathematicians - Invited talk, Madrid 2006
Grant Award by Research Council Grants, Rutgers 2006
Grant Award by Research Council Grants, Rutgers 1996
Alfred P. Sloan Fellowship in Mathematics, 1988-89
International Conference of Mathematical-Physics, Plenary talk, Marsseille 1986
Avraham Cohen Fellowship in Physics, 1982

Grants:

NSF Grant (with T.H. Wolff), Caltech, 1986
NSF Grant (with B. Simon), Caltech, 1987
NSF Grant, Princeton, 1989-91
NSF Grant, Rutgers, 1994-1997
NSF Grant, Rutgers, 1997-2001, (and REU supplement)
REU Grant from NSF, 1999-2001,

NSF Grant, Rutgers, 2001–2004, (and REU supplement)
NSF Supplement Grant - 2003,
NSF Grant - 2005–2008
NSF Supplement Grant - 2006
GAANN Grant (2009)- Coauthor
NSF Grant 2009-2012
BSF Israel-US, 2007–2011

Journal Editorials:

Associate Editor for Letters in math. Phys., 1999 -
Editorial Board of Geometric and Functional Analysis (GAFA), 2001 -
Member of DIMACS and of Editorial Board of Book Series

Service to the Profession:

NSF Review Panel, 2003, 2006
Visiting Comm., Princeton, Physics 1992
Visiting Comm., Toronto 1994, 1995, 1999, 2003, 2009
Visiting Comm., Cergy-Pontoise, France 2004
Referee for NSF proposals
Referee for Math Reviews
Reviews on candidates for positions, Awards, 1995-1999, 2002-2005
Reviews of Books for Publishers
Referee for: Annals Math., Duke Math Jour., Lett. Math. Phys., SIAM,
J. Stat. Phys., Nonlinearity, Comm. Math. Phys., J. Math. Phys., J. AMS,
GAFA, CPDE and others

Conferences Organized:

SIAM -Philadelphia (2010) Organizer of the Minisymposium on General Relativity
AMS Conference, Rutgers 2007, Co-organizer
SIAM Conference on “Complex Dynamics...”, Utah 2007, Co-organizer
Banff Conference on “Evolution of microscopic and macroscopic fields”,
(2006) - Co-organizer
Organizer of “Frontiers of PDE’s and Dynamical Systems,” Rutgers 2003
Conference Committees: Organizing and Scientific Committees of
PDE Conference in Rutgers, 2001

Service to the University:

Member of GAANN Grant proposal, and Advisory Committee for the recruitment of
underrepresented groups.
Committee member of AP for Prof II, 2006 - 2008
Committee member of REU students
Advisory Committee on tenure promotion

Qualifying Exams Comm., Rutgers 1995, 1998
Advisory Committee on tenure candidate, 1999
Advisory Committees on hirings 2002, 2003, 2005
Advisory Committee to Undergraduate Chair (2002)
Directed research by two Rutgers undergraduate students and one
graduate visiting student from ETH, 1998
Directed research by three Rutgers undergraduate students, 1999-2000
Directed research by two Rutgers undergraduates in summer research
program, 2000 and two students in 2001 and 2002
Directing REU students, 2000 - 2004
Directs REU students (2), Summer 2005, 2006

Graduate Students:

A. Kreuger
J. Xiao
M. Larenas
P. Blue (2004, University of Edinburgh)
C. Stucchio (2007 , Courant Institute)
K. Bennoune (M.Sc.-Physics, 2003)

PostDocs: M. Beceanu (2010-)
Y. Strauss (2003)

CONFERENCES:

Invited talks (conferences only):

Conference on “Algebraic Methods in Field Theory,” Gottingen, 1982
Conference on “Scattering Theory,” Oberwolfach, 1983
“Western States Mathematical Physics Conference,” Caltech, 1985
“Fundamental Problems of Gauge Field Theory,” Erice, 1985
VIII International Congress on Mathematical Physics, Marseille, 1986
American Math. Soc. Meeting, Louisville, 1990
Midwest PDE Conf., Chicago, 1990
Nantes, Int. Colloq. on Semiclassical Methods, 1991
Southern California Analysis and PDE Seminar, 1992
Summer School on Mathematical Quantum Theory, Vancouver, 1993
“Hard Problems in Mathematical Physics,” Ann-Arbor, 1994
Workshop on Partial Differential Equations and Related areas of Harmonic Analysis,
Edinburgh, 1994
Dynamical Systems Methods in Partial Differential Equations, MSRI, Berkeley, 1994
Workshop on Partial Differential Equations and their Applications, The Fields
Institute, Toronto, 1995
Partial Differential Equations, Potsdam, 1996
Hyperbolic Dynamics and applications to nonequilibrium statistical mechanics,
Rutgers, 1996
AMS Conference, Maryland, 1997
Microlocal Analysis and Mathematical Physics, The Fields Institute
Toronto, 1997
Rigorous Renormalization Group, Ascona, Switzerland, 1998
Classical and Quantum Open Systems, Lille, June 1999
Theorie des Resonances, Luminy, June 1999
Nonlinear Dynamics and Renormalization Group, Montreal, August 1999
Statistical Mechanics Conference, Rutgers, 2000
Renormalization Group, Oberwolfach, 2002
Statistical Mechanics Conference, Rutgers 2002
Semiclassical Methods: MSRI 2003
Workshop on the interaction of Gravity with Classical Fields, Montreal 2003
Glanon Meeting, France, June 2005, Series of Invited Talks
“Complex Systems..”, Israel 2005
The 5th Israeli Applied Math Mini-workshop - Technion, 2006
International Congress of Mathematicians - Invited talk, Madrid 2006
The Zygmund Lecture, Chicago 2006
The Zygmund lecture, Chicago 2008
AMS Conference- Section on Nonlinear Dispersive equations, MA (2009)
Workshop on Anderson Localization, Dresden (2009)

Workshop on general relativity, Simons Center (Stonybrook, NY) (2009)
Conference on Nonlinear Optics, Ein-Gedi,(Israel) (2009)
Conference on Nonlinear Dispersive waves, The Schrödinger Institute, Vienna (2010)
Nonlinear PDE Conference, Johns Hopkins Univ. (2011)

Activities:

Summer school course given—On Many Body Problems in Quantum Mechanics, Nantes, 1991

Visiting Fellow at the special year on Dynamical Systems Methods in PDE, MSRI, 1994

Visiting Fellow at the Research Programme on Harmonic Analysis and PDE, Edinburgh, 1994

Colloq. and series of talks given on the Problem of Global Existence for the wave equation, Toronto, 1994

Series of talks given on “Time dependent Resonance theory”, Zürich, 1996

Series of talks given on “Radiation Damping for Nonlinear Systems”, Zürich, 1998

Member of Math Research Group - Bell Labs (2002-2003)

Visiting Fellow, Fields Institute (2003)

Visiting Fellow, University of Notre-Dame (2004)

Visiting Fellow at the Schrödinger Institute, Vienna (2010)

Visiting fellow at the Pauli Institute, Vienna (2010)

PUBLICATIONS:

Journals:

1. L.P. Horwitz and A. Soffer, *On the Existence of the Wave Operators in Relativistic Quantum Scattering Theory*, Helv. Phys. Acta, **53**, 1980.
2. L.P. Horwitz, Y. Lavie and A. Soffer, *Scattering Theory in Relativistic Quantum Mechanics*, Proceeding of the VII Int. Colloq. on Group Theoretical Methods in Physics, **3**, Annals of the Israel Phys. Soc., 1980, 231-235.
3. L.P. Horwitz and A. Soffer, *B*-Algebra Representation in Quaternionic Hilbert Modules*, J. Math. Phys., **24**, 1983, 12.
4. A. Soffer, *A perturbation Theory for Long-Range Interactions of the Coulomb Type*, Lett. Math. Phys., **7**, 1983, 163-169.
5. A. Soffer, *Completeness of Wave Operators in Relativistic Quantum Mechanics*, Lett. Math. Phys., **8**, 1984.
6. A. Soffer, *Long Range Scattering in Non-Abelian Gauge Theory*, Phys. Rev., **D15**, Rapid Comm. **29**, 1984, 8.
7. M. Schwartz and A. Soffer, *An Exact Inequality for Random Systems Applications to Random Field*, Phys. Rev. Lett., **55**, 1985, 2499.
8. I.M. Sigal and A. Soffer, *Asymptotic Completeness for Short Range Many Body Systems*, Bull. AMS, 14, January 1986, 1.
9. I.M. Sigal and A. Soffer, *Asymptotic Completeness for N-body Quantum Mechanics*, IAMP Mathematical Physics Conference, Marseille, 1986, (10 pages).
10. I.M. Sigal and A. Soffer, *N particle Scattering Problem-Asymptotic Completeness for Short Range Systems*, ed. Knowles Int. Conf. on Differential Equations and Math. Phys., Birmingham, Alabama, 1986, (35 pages).
11. M. Schwartz and A. Soffer, *Critical Correlation, Susceptibility Relations In Random Field Systems*, Phys. Rev., B15 , Rapid Comm. **33**, No. 3-4, 1986, 2059-2061.
12. I.M. Sigal and A. Soffer, *The N-particle Scattering Problem-Asymptotic Completeness for Short Range Systems*, Annals of Math., **126**, 1987, 35-108.
13. I.M. Sigal and A. Soffer, *Local Decay and Propagation Estimates for Time Dependent and Time Independent Hamiltonians*, (50 pages), preprint, Princeton 1988, (<ftp://www.math.rutgers.edu/pub/soffer>).
14. I.M. Sigal and A. Soffer, *Asymptotic Completeness for Long Range 3-body Systems*, (40 pages), preprint, Caltech 1987, (<ftp://www.math.rutgers.edu/pub/soffer>).
15. I.M. Sigal and A. Soffer, *Long Range Many Body Scattering Asymptotic Clustering for Coulomb Type Potentials*, Inventiones Mathematics, **99**, 1990, 115-143.

16. A. Soffer and M. Weinstein, *Multichannel Nonlinear Scattering Theory for Nonintegrable Equations*, Comm. Math. Phys., **133**, 1990, 119-146.
17. A. Soffer and M. Weinstein, *Multichannel Nonlinear Scattering Theory for Nonintegrable equations*, Proceeding of the Oléron Conference on Integrable Systems, 1988, Springer Lecture Notes in Physics, No. 342, 312-327.
18. J.L. Journé, A. Soffer and C.S. Sogge, *$L^p \rightarrow L^{p'}$ Estimates for time dependent Schrödinger Equations*, Bull., AMS, **23**, No. 2, 1990.
19. J.L. Journé, A. Soffer and C. Sogge, *Decay Estimates for Schrödinger Operators*, Comm. Pure Appl. Math. **XLIV** No. 5, 1991, 573-604.
20. E. Carlen and A. Soffer, *Entropy Production by Block Spin Summation and Central Limit Theorems*, Comm. Math. Phys. **140**, No. 2, 1991, 339-371.
21. A. Soffer and M. Weinstein, *Multichannel Nonlinear Scattering Theory for Nonintegrable Equations II, the Case of Anisotropic Potentials and Data*, Journal of Differential Equations, **98** No. 2, 1992, 376-390.
22. A. Soffer, *On the Many Body Problems in Quantum Mechanics*, Méthodes Semiclassiques, Astérisque, **207**, 1, 1992, 109-152.
23. J. Ginibre, A. Soffer and G. Velo, *The Global Cauchy Problem for the Critical Nonlinear Wave Equation*, Journal of Functional Analysis, **110**, No. 1, 1992, 96-130.
24. I.M. Sigal and A. Soffer, *Asymptotic Completeness for $N \leq 4$ Particles Systems with Coulomb-type Interactions*, Duke Math. J. **71**, No. 1, 1993, 243-298.
25. I.M. Sigal and A. Soffer, *Asymptotic Completeness of N Particle Long Range Scattering*, J. Am. Math. Soc., **7**, No. 2, 1994, 307-334.
26. A. Boutet de Monvel, V. Georgescu and A. Soffer, *N -body Hamiltonians with hard core interactions*, Rev. in Math. Physics, **6**, No. 4, 1994, 515-596.
27. A. Soffer, M. Weinstein, *Time Dependent resonance theory and perturbations of embedded eigenvalues* (P. Greiner, V. Ivrii, L. Seco and C. Sulem, eds), CRM Lecture Notes, Toronto (1995), 277-282.
28. A. Soffer, *Time dependent resonance theory in Quantum Mechanics*, PDE Conference Proc., Potsdam (1996), Akademie-Verlag, 384-391.
29. A. Soffer, M. Weinstein, *Time Dependent resonance theory*, Geometric and Functional Analysis, (GAFA) **8**, 1998, 1086-1128.
30. A. Soffer, M. Weinstein, *Nonautonomous Hamiltonians*, J. Stat. Phys., **93**, 1998, 359-391.
31. A. Soffer, M. Weinstein, *Resonances, Radiation Damping and Instability in Hamiltonian nonlinear wave equations*, Inventiones mathematicae, **136**, 1999, 9-74.

32. V. Bach, J. Fröhlich, I. M. Sigal, A. Soffer, *Positive Commutators and Spectrum of Pauli-Fierz Hamiltonians of Atoms and Molecules*, Comm. Math. Phys., **207**, 1999, 557-587.
33. W. Hunziker, I. M. Sigal, A. Soffer, *Minimal Velocity Bounds*, Comm. PDE, **24**, (1999), No. 11/12, 2279-2295.
34. A. Soffer, M. Weinstein, *Ionization and scattering for short lived potentials*, Lett. Math. Phys., 1999, **48**, No.4, 339-352.
35. I. Laba, A. Soffer, *Global Existence and Scattering theory for the Nonlinear Schrödinger equation on Schwarzschild manifold*, Helv. Phys. Acta, **72**, (1999), 274-294.
36. P. Miller, A. Soffer, M. Weinstein, *Methastability of Breather modes of Time Dependent Potentials*, Nonlinearity, **13**, (2000), 507-568.
37. O. Costin, A. Soffer, *Resonance theory for Schrödinger Operators*, Comm. Math. Phys., **224**, (2001), 133-152.
38. A. Soffer, *The Enss Method*, Encyclopedia of Mathematics, supp III (2001), 140-141.
39. A. Soffer, *Dissipation Through Dispersion*, CRM Lecture Notes, (C. Sulem, I. Sigal, eds.), (2001).
40. I.M. Sigal, A. Soffer, L. Zielinski, *On the spectral properties of Hamiltonians without conservation of the particle number*, J. Math. Phys., (2002).
41. F. Nier, A. Soffer, *Dispersion and Strichartz estimates for some finite rank perturbations of the Laplace Operator*, J. Funct. Analysis, **198**, (2003), 511-535.
42. A. Soffer, W.M. Wang *Anderson Localization for time periodic Random Schrödinger Operators*, Com. PDE, **28**, Nos. 1,2, (2003), 333-347.
43. P. Blue, A. Soffer, *Semilinear wave equations on the Schwarzschild manifold I:local decay*, Advances in Dif. Eqs., **8**, No. 5 (2003), 595-614.
44. A. Soffer, M. Weinstein, *Selection of the ground state in the nonlinear Schrödinger equation*, Rev. Math. Phys., **16**, No.8 (2004), 977-1071.
45. E. Carlen, A. Soffer, *Entropy production bounds in the central limit theorem*, to be submitted (2005), (20 pages).
46. I. Rodnianski, W. Schlag, A. Soffer, *Dispersive analysis of charge transfer models*, Communications on Pure and Applied Mathematics **58**, Issue 2 (2005), 149-216.
47. I. Rodnianski, W. Schlag, A. Soffer, *Asymptotic stability of N-solitons*, submitted, (2003), (75+ pages).
48. H. Lindblad, A. Soffer, *A remark on long range scattering for the nonlinear Klein-Gordon equation*, J. Hyperbolic Diff. Eqs., **2**, No.1 (2005), 77-89.

49. H. Lindblad, A. Soffer, *Asymptotic Completeness for the critical Klein-Gordon Equation*, Lett. Math. Phys., Vol.3 (2005)249-258.
50. H. Lindblad, A. Soffer, *Scattering and small data completeness for the critical nonlinear Schrödinger equation*, Nonlinearity **19** (2006) 345-353
51. P. Blue, A. Soffer, *The wave equation on the Schwarzschild metric II: Local decay for the spin 2 Regge Wheeler equation*, J. Math. Phys., **46** (2005), 012502.
52. N. Komarova, A. Soffer, *Nonlinear waves in double-stranded DNA*, Bull. Math. Biology, **67**, No.4 (2005), 701-718.
53. Y. Strauss, A. Soffer, I.M. Sigal, *From Gammow states to Resonances for Schrödinger equations*, preprint, (2005), (22 pages).
54. V. Fleurov, A. Soffer, *Nonlinear effects in tunneling escape in N-body quantum systems*, Europhysics Letters, **72**, No.2 (2005), 287-293.
55. P. Blue, A. Soffer, *Decay estimates and phase space analysis on some black hole metrics*, J. Func. Analysis, (2008) (90+ pages)
56. A. Soffer, M. Weinstein, *Theory of Multidimensional Nonlinear Dispersive Waves: From Exact Results to Applications*, Phys. Rev. Lett. **95** 213905(2005).
57. A. Soffer, C. Stucchio, *Reflectionless Propagation Algorithm for the Schrödinger Equation*, (2006), 100+ pages.
58. N. Komarova, A. Soffer, *Loaded Waves Model of RNAP-DNA Dynamics*, in preparation, (30 pages).
59. C. Siegel, A. Soffer, C. Stucchio, *Polynomial time bounds of Errors in Dirichlet to Neumann Schemes*, preprint (2008), posted, to be submitted.
60. A. Soffer, C. Stucchio, *Open Boundaries for the Nonlinear Schrödinger Equation*, (20 pages), J. Comp. Physics, **225**, No.2 (2007) 1218-1262.
61. G. Dekel, V. Fleurov, A. Soffer, C. Stucchio, *Temporal dynamics of tunneling. Hydrodynamic approach*, (11 pages), Physical Rev. A. **75** 043617(2007).
62. W. Schlag, A. Soffer, W. Staubach, *Decay estimates for the Schrödinger Evolution on asymptotically conic surfaces of revolution I*, Trans. Amer. Math Soc. **362** (2010) No.1, 289-318
63. A. Soffer, *Soliton Dynamics and Scattering*, International Congress of Mathematicians Vol III,(2006).459-471
64. P. Blue, A. Soffer, *Improved decay rates with small regularity loss for the wave equation about a Schwarzschild black hole*, Preprint (40 pages) (2007), submitted.
65. A. Soffer, C. Stucchio, *Multiscale Resolution of Shortwave-Longwave Interaction*, Comm. Pure Appl. Math Vol. LXII 0082-0124 (2009)

66. P. Blue, A. Soffer, *A space-time integral estimate for large data semi-linear wave equations on Schwarzschild manifold*, Letters in Math. Phys. **81**, No3(2007)227-238.
67. S. Fishman, Y. Krivolapov, A. Soffer, *On the problem of dynamical localization in the nonlinear Schrödinger equation with a random potential*, J. Stat. Phys. 131 (2008), no. 5, 843–865.
68. W. Schlag, A. Soffer, W. Staubach, *Decay for the wave and Schroedinger equations on manifolds with conical ends, part II*, Trans. Amer. Math. Soc. **362** (2010), No. 1, 19-52
69. A. Soffer, C. Stucchio, *Stable Open boundaries for Anisotropic waves*, preprint (2008).
70. A. Barak, O. Peleg, C. Stucchio, A. Soffer, M. Segev *Observation of Soliton Tunneling Phenomena and Soliton Ejection*, Phys. Rev. Lett. **100**, 153901 (2008).
71. A. Barak, O. Peleg, A. Soffer, M. Segev, *Multi-Soliton Ejection from an Amplifying Potential Trap*, Optics Letters, Vol. 33, Issue 16, 1798-1800 (2008)
72. G. Dekel, O.V. Farberovich, A. Soffer, V. Fleurov, *Nonlinear Dynamic Phenomena in Macroscopic Tunneling*, Physica D: Nonlinear Phenomena (2009) **238**, 1475-1481
73. A. Soffer *Geometric Characterization of Solitons*, Comm. Partial Differential Equations 33 (2008), no. 10-12, 1953–1974
74. J. Froehlich, I. M. Sigal, A. Soffer, C. Stucchio *Dynamics of Quantum Friction*, Preprint (2008)
75. Yevgeny Krivolapov, Shmuel Fishman, Avy Soffer, *A numerical and symbolical approximation of the Nonlinear Anderson Model*, (2010) (20 pages) New J. Phys. 12, 063035 ,
76. Roland Donniger, Wilhelm Schlag, Avy Soffer, *On pointwise decay of linear waves on a Schwarzschild black hole background*, Preprint, (2009) (20 pages) Comm. Math. Phys., to appear.
77. G. Dekel, V. Farberovich, V. Fleurov, A. Soffer, *Dynamics of Macroscopic Tunneling in Elongated BEC*, Phys. Rev. A 81, 063638 (2010)
78. Roland Donniger, Wilhelm Schlag, Avy Soffer, *A proof of Price's Law on Schwarzschild black hole manifolds for all angular momenta*, Advances in Mathematics Volume 226, Issue 1, 15 January 2011, Pages 484-540
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79. Shmuel Fishman, Yevgeny Krivolapov, Avy Soffer, *Perturbation theory for the Nonlinear Schroedinger Equation with a random potential*, Nonlinearity 22 (2009), no. 12, 28612887.
80. A. Soffer, *The maximal velocity of a Photon* Preprint (2010), (22 pages), submitted.

81. W. Schlag, A. Soffer *On Pointwise Decay of Nonlinear waves*, Preprint (2010), (33 pages)
82. Marius Beceanu, Avy Soffer *The Schroedinger Equation with Potential in Rough Motion* (2011) Comm. in PDE, to appear.
83. Alexander Rivkind, Yevgeny Krivolapov, Shmuel Fishman, Avy Soffer *Eigenvalue repulsion estimates and some applications for the one-dimensional Anderson model*, Journal of Physics A- mathematical and general, to appear (2011)
84. Juerg Froehlich, Zhou Gang, Avy Soffer *Some Hamiltonian Models of Friction* J. Math. Phys., to appear (2011).
85. E. Cohen, S. Muenzel, J. Fleischer, V. Fleurov, A. Soffer *Jet-like tunneling from a trapped vortex* preprint (2011), submitted.
86. S.Fishman, Y. Krivolapov, A. Soffer *The Nonlinear Schroödinger Equation with a random potential: Results and Puzzles*, submitted (2011).(Solicited)

Updated: September 20, 2011