

CURRICULUM VITAE

PERSONAL

Date and Place of Birth October 29 1952, Vilnius, Lithuanian SSR
Citizenship Israeli (since 1960, date of immigration to Israel)
Israeli Military Service 1974-1980 (academic reserve). Discharged as Major
Marital Status Married (to Zipora, nee Zmishlany); 2 children:
Naham (b. 1978), Yodan (b. 1986)

EDUCATION

1970-1974 B.Sc. in Physics, Technion, Israel institute of Technology, Haifa, Israel
1976-1979 M.Sc. in Physics: Technion, Israel Institute of Technology, Haifa, Israel
1980-1983 Ph.D. in Physics: University of New Mexico, Albuquerque, NM, USA

Title of M.Sc. Thesis: Quantum-Mechanical and Classical Analysis of a Driven Anharmonic Oscillator with Application to Laser-Excited Molecular Vibrations.

Supervisor: Professor I.R. Senitzki

Title of Ph.D. Thesis: Fast Charged Particles in Crystalline Solids: Propagation, Band Structure and Emission of Radiation.

Supervisors: Professors M.O. Scully and J.K. McIver

ACADEMIC AND PROFESSIONAL EXPERIENCE

1997-present Professor, Theoretical Quantum Optics Chair, Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel
1991-1997 Associate Professor (Tenured), Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel
1987-1991 Senior Scientist, Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel
1985-1987 Scientist, Chemical Physics Department, Weizmann Institute of Science, Rehovot, Israel
1983-85 Lecturer, School of Chemistry, Tel-Aviv University
Tel-Aviv, Israel

FELLOWSHIPS, HONORS AND AWARDS

1985	Levi Eshkol Fellowship
1986-1987	Sir Charles Clore Fellowship
1986	Visiting Fellowship, University of Aarhus, Denmark
1986-1988	Bat-Sheva de Rothschild Foundation Fellowship
1988	The Yale-Weizmann Foundation Fellowship
1988-1991	M. Russel-Haas Chair U.S.-Israel Binational Science Foundation Fellowship (with R.K. Chang)
1989-1994	Marks and Spencer Foundation Fellowship, London
1993-1996	Minerva Foundation Fellowship
1994	Somekh-Saks Research Prize
1995-1997	German-Israeli Foundation Fellowship (with W. Schleich)
1996-	The George W. Dunne Professorial Chair. The Yale-Weizmann Foundation Fellowship.
1997-2000	Israel Science Foundation Fellowship
1999-	Elected Fellow, Optical Society of America
2000-2002	U.S.-Israel BSF Fellowship (with M.O. Scully)
2001-2003	German-Israeli Foundation Fellowship (with G. Rempe and W. Schleich)
2001-2003	Coordinator, EU Research Training Network on "Quantum Complex Systems"
2001-2004	Minerva Foundation Fellowship
2002-	Elected Fellow, American Physical Society
2003-2007	Israel Science Foundation Fellowship
2006-2009	German-Israeli Foundation Fellowship (with M. Oberthaler)
2004-2008	Israel Science Foundation: Center of Excellence "Nonlinear Waves"
2004-	Elected Fellow, British Institute of Physics
2008	The Lamb Award in Laser Physics and Quantum Optics
2009	The Humboldt Meitner Award in Atomic and Molecular Physics
2008-2011	Coordinator, EU (FET Open) STREP on Macroscopic Interference Devices in Atoms and Solids (MIDAS)
2012-2016	Israel Science Foundation Fellowship

EDITORIAL ACTIVITIES

Member of the Editorial Board of the periodicals:

Optics Communications (1997-2003)

J. Optics B (Quantum and Semiclassical Optics) (since 2002)

J. Phys. B. (since 2005)

Topical Editor for Optics Letters (since 2003)

INVITED PRESENTATIONS AT SCIENTIFIC MEETINGS

1. *"Spontaneous Emission of Radiation from Fast Charged Particles in Crystals"*, LASERS '82 Conference, New Orleans, USA, December 1982.
2. *"A Unified Theory of Radiation from Relativistic Charged Particles in Crystals"*, International Free Electron Laser Conference, Orcas Island, USA, July 1983.
3. *"Stimulated and Cooperative Radiation from Channeled Particles and Ions"*, NATO Conference on Relativistic Channeling, Maratea, Italy, April 1986.
4. *"Quantum Theory of Fast Charged Particles in Crystals"* – *ibid.*
5. *"Time-Resolved Features of Cooperative Fluorescence"*, MOLEC VI, Aussoix, France, August 1986.
6. *"Cooperative Fluorescence as a Probe of Atomic Clusters and Collisions"*, Israel Physical Society Annual Meeting, Tel-Aviv, Israel, April 1987.
7. *"Orbital Polarization and Fine-Structure Effects in Time-Resolved Cooperative Fluorescence"*, Faraday Symposium on Orientation and Polarization effects in reactive Collisions, Bad Honnef, W. Germany, December 1988.
8. *"Local and Nonlocal Detection of Radiative Quantum Noise by Coherently Superposed States"*, International Workshop on the Foundations of Quantum Mechanics, Santa Fe, USA, June 1990.
9. *"Quantum Electrodynamics in Three-Dimensionally Periodic Structures"*, International Conference on Coherent Radiation Processes in Strong Fields, Washington, DC, June 1990.
10. *"Nonlinear Interactions of Lasers with Channeled Beams as Sources of Coherent and Squeezed X-Radiation"*, *ibid.*
11. *"Squeezing in Microspheres"*, Annual Theory Festival, Max-Planck Institute for Quantum Optics, Garching, Germany, August 1990.
12. *"Aharonov-Bohm Effects of Quantum Noise in Dispersive Cavity Fields"*, European Research Conference on Quantum Optics, Davos, Switzerland, October 1990.
13. *"Generation of Non Classical Light in Spherical Droplets:", SPIE Annual Meeting, Dallas, Texas, May 1991.*
14. *"Aharonov-Bohm Measurements of Radiative Noise in Cavities"*, Santa Fe International Workshop on Foundations of Quantum Mechanics, May 1991.
15. *"Squeezed Resonance Fluorescence as a Probe of Two-Atom Collisions"*, XIV International Conference on Coherent and Nonlinear Optics (ICONO '91), St. Petersburg, Russia, September 1991.
16. *"QED in Photonic Bandgaps"*, 2nd French-Israeli Nonlinear Optics Conference, Port Barcares, France, May 1992.

17. *"Free Electron Lasers without Inversion"*, International Workshop on Atomic Coherence and Interference in Quantum Optics, Crested Butte, Colorado, September 1992.
18. *"Space-Time Correlations in Photonic Tunneling"*, Adriatico Research Conference on Quantum Interferometry, International Center for Theoretical Physics, Trieste, Italy, March 1993.
19. *"QED in Dielectric Structures"*, European Physical Society (EPS) Conference, Florence, Italy, September 1993.
20. *"Field State Preparation in Photonic Band Structures"*, Willis Lamb 80th Birthday Conference, Ulm, Germany, July 1993.
21. *"Optimized Strategy for Quantum State Preparation in Cavities"*, European research Conference on Quantum Optics, Davos, Switzerland, September 1994.
22. *"Classical Free Electron Lasers without Inversion"*, LPHYS '94, New York, October 1994.
23. *"Causality and Non-Locality in "Faster-than-Light" Photon Travel"*, Conference on the Dilemma of EPR - 60 Years Later, Haifa, March 1995.
24. *"Quantum Optics in Periodic Dielectric Structures"* \rightarrow Coherence and Quantum Optics (CQO) VII, Rochester, June 1995.
25. *"Cooperative and Coherent Optical Processes in Field Confining Structures"*, Conference on Optical Wavelength Size Structures, Cargese, Corsica, August 1995.
26. *"Optimized Control of Quantum Field States in Cavities"*, 4th French-Israeli Nonlinear and Quantum Optics Conference, Les Arcs, France, January 1996.
27. *"Coherent Control of Free Electron Lasers"*, Bat-Sheva Conference on Coherent Control, Neve Ilan, Israel, March 1996.
28. *"Control of Atom Dynamics in Multimode Resonators"*, Microlaser and Cavity QED Workshop, Les Houches, France, April 1997.
29. *"Decoherence Control in Multimode Systems"*, 5th International Conference on Squeezed States and Uncertainty Relations (FICSSUR '97), Balatonfured, Hungary, May 1997.
30. *"Manipulation of Open Quantum Systems"*, International Conference on Quantum Optics IV, Jaszowiec, Poland, June 1997.
31. *"Superluminal Propagation in Nonlinear Optics"*, Indian National Laser Symposium, Ahmedabad, India, December 1997.
32. *"Control of Atomic and Molecular State Decay"*, German-Israeli Workshop on Atomic and Molecular Dynamics, Ulm, December 1997.
33. *"Optical Tachyons: How Fast Can Information Travel?"*, SQOVII Conference, Minsk, May 1998.
34. *"Tachyons and Superluminality in the Quantum Domain"*, Conference on Mysteries and Paradoxes of Quantum Mechanics, Lake Garda, Italy, September 1998.

35. *"State Control in Cavities and Microstructures"*, Microlaser and Cavity QED Workshop, Schloss Reisenburg, Germany, October 1998.
36. *"Optically Induced Transparency in Amplifying Photonic Crystals"*, WECS2 (2nd Workshop on Electromagnetic Crystal Structures), Laguna Beach, California, January 1999.
37. *"Quantum and Classical Gap Solitons in Periodic Structures"*, Conference on Quantum Optics in Semiconductor Structures, College Station, Texas, January 1999.
38. *"Dephasing of Interfering Evolution Paths: Can it be Useful?"*, Adriatico Conference on Quantum Interferometry, ICTP, Trieste, Italy, March 1999.
39. *"How Can Measurements Slow Down Decay?"*, Israel Physical Society, Annual Meeting, March 1999.
40. *"Control of Dissipative Quantum Systems"*, WQO9, 9th Central European Workshop on Quantum Optics, Chudobin Castle, Czech Republic, April 1999.
41. *"Decay, Coherence and Propagation in Photonic Band Structures"*, LPHYS '99, Budapest, July 1999.
42. *"Superluminal, Causality and Information in Tunneling"*, Conference on Tunneling Effects, Krakow, Poland, September 1999.
43. *"Quantum Optics in Photonic Band Structures"*, The Royal Dutch Academy Colloquium on Quantum Optics of Small Structures, Amsterdam, September 1999.
44. *"Cold Atom Collisions in High-Q Cavities"*, Microlaser and Cavity QED Workshop, Schloss Reisenburg, Germany, October 1999.
45. *"Laser Induced Gravity: 1/R Attractive Interaction in Cold Gases"*, Physics & Quantum Electronics (PQE) 2000 Conference, Snowbird, Utah, January 2000.
46. *"Control of Quantum Decay"*, TAMU Symposium, College Station, Texas, January 2000.
47. *"Entanglement in Field-Induced Cold Atom Collisions"*, 6th French-Israeli Nonlinear and Quantum Optics (FRISNO) Conference, Les Houches, France, February 2000.
48. *"Photon-Photon Correlations in Photonic Crystals"*, International Conference on Quantum Optics (ICQO) 2000, Raubichi, Belarus, May 2000.
49. *"Anti-Zeno and Zeno Effects of Frequent Measurements"*, Conference on Mysteries and Paradoxes of Quantum Mechanics, Lake Garda, Italy, September 2000.
50. *"Decoherence and Entanglement Control in Complex Systems"*, Erwin Schrödinger Institute, Vienna, Austria, October 2000.
51. *"Control of Entanglement and Decoherence in Molecular Systems"*, Gordon Conference on Quantum Control, July 2001.
52. *"Is Quantum-Mechanical Decay Reversible?"*, Intl. Workshop on Laser Physics and Quantum Optics (N.Ramsey's Festschrift), Jackson Hole, Wyoming, Aug. 2001.
53. *"The Zeno and Anti-Zeno Effects and Decay Control"*, Intl. Conference in Mysteries and Paradoxes of Quantum Mechanics, Garda, Italy, Sept. 2001.

54. *"Quantum Optics in Photonic Crystals"*, SPIE Optoelectronics 2002, Conference on Photonic Bandgap Materials and Devices, Jan. 2002, San Jose, CA.
55. *"Control of Dipole-Dipole Interactions in Dielectric Structures"*, Intl. Workshop on Quantum Dots for Quantum Computing and Classical Size-Effect Circuits (IWQDQC), Kochi, Japan, Jan. 2002.
56. *"Laser-Induced Long-Range Interactions in Cold Gases"*, Intl. Conference on Dynamics and Thermodynamics of Systems with Long-Range Interactions, Les Houches, France, Feb. 2002.
57. *"High-Fidelity Quantum Logic and Communications Via Optical Fields"*, IV Adriatico Research Conference on Quantum Interferometry, ICTP, Trieste, Italy, March 2002.
58. *"Giant Photon-Photon Interactions in Photonic Crystals"*, International Conference on Quantum Optics (ICQO) 2002, Minsk, Belarus, May 2002.
59. *"Quantum Decoherence and Irreversibility in the Weisskopf-Wigner Approach"*, The Wigner Centennial Conference, Pecz, Hungary, July 2002.
60. *"Control of Entanglement and Decoherence in Quantum Complex Systems"*, 1st Research workshop on Quantum Complex Systems (QUACS), Stockholm, Sweden, Aug. 2002.
61. *"Laser-Induced Long-Range Cold Atom Interactions"*, 2003 Conference on Physics of Quantum Electronics, Snowbird, Utah, Jan. 2003 (Plenary).
62. *"Quantum Solid and Liquid – Like Phenomena in Ultra Cold Gases Via Laser – Induced Long-Range Interactions"*, Intl. Workshop on Quantum Gases, Schloss Reinsburg, Germany, April 2003.
63. *"Causality and Superluminality in Quantum Evolution and Measurements"*, Intl. Conference on Anomalies and Strange Behavior in Physics, Naples, Italy, April 2003.
64. *"Controlled Entanglement of Complex Systems"*, 8th International Conference on Squeezed States and Uncertainty Relations (ICSSUR 8), Puebla, Mexico, June 2003. (Plenary).
65. *"Generation and Communication of Photon-Photon and Atom-Atom Entangled States"*, SPIE Quantum Communications & Quantum Imaging Conference, San-Diego, CA, August. 2003.
66. *"Dynamical Control of Decay and Decoherence in Multilevel Systems"*, Intl. Conference on Physics and Control 2003, St. Petersburg, Russia, August 2003.
67. *"New Strategies for Control of Entanglement and Decoherence in Quantum Complex Systems"*, 2nd ResearchWorkshop on Quantum Complex Systems (QUACS), Vienna, Austria, Sept. 2003.
68. *"Dynamical Control of Macroscopic Quantum Tunneling"*, Advanced NATO Workshop on Decoherence, Entanglement and Information in Complex Systems (DEICS), Les Houches, France, April 2004 (co-director).
69. *"Photon-Photon Entanglement via Symmetric Cross-Coupling in Solids"*, Korean Physical Society Meeting, Jeju Island, Korea, May 2004.

70. "A Unified Approach to Dynamical Control of Decoherence", Quantum Information and Control Conference, The Fields Institute, Toronto, July 2004.
71. "Dynamical Control of Entanglement and Decoherence: From Nano-to Macro-Systems", Conference on New Frontiers in Quantum Theory and Measurement, Schloss Reisensburg, Germany, Sept. 2004.
72. "Dynamically Suppressed Decoherence: From Qubits to Complex Systems", Intl. School on Quantum Entanglement, Decoherence and Geometrical Phases, ICTP, Trieste, Italy, Nov. 2004 (co-director).
73. "Laser-Induced Non-Mean Field Effects in Quantum Gases", Intl. School and Workshop on Cold and Quantum Gases, Kioloa, Australia, Dec. 2004.
74. "Laser-Induced Entanglement in BEC", Research Workshop on Entanglement and Decoherence, Delft, Holland, Jan. 2005.
75. "Laser-Induced Control of Multiatom Entanglement and Decoherence", French-Israeli: Conference on Nonlinear Optics (Frisno)-8, Ein-Bokek, Dead Sea, Feb. 2005.
76. "Dynamical Control of Decoherence for Bell States", Quantum Information Processing (QIPC), Innsbruck, Austria, Feb. 2005.
77. "Dynamical Control of Macroscopic Quantum Tunneling and Entanglement in Josephson Devices", ESF Conference in Physics of Superconducting Phase Shift Devices, Ischia, Italy, April 2005.
78. "Dynamical Control of Entanglement and Decoherence: from Qubits to Complex Systems", 9th Intl. Conference on Squeezed States and Uncertainty Relations, Besancon, France, May 2005.
79. "Laser-Induced Multiatom Entanglement", New Millennium Microtechnologies Symposia, Photonics Symposium, Seville, Spain, May 2005.
80. "Internal-Translational Entanglement Carries More Quantum Information", Quantum Physics of Nature (QUPON) & Quantum Information Processing Conference (QIPC), Vienna, Austria, May 2005. (Plenary).
81. "Controlled Decoherence of Multiatom States in BEC", German-Israeli Minerva Workshop on Atom Quantum Optics, Eilat, Israel, Oct. 2005.
82. "Decoherence Control of Single- and Multi-Partite Wavepackets", Intl. Conference on Quantum Optics, Hong Kong, Dec. 2005.
83. "Was Zeno right after all?", Winter Colloquium on The Physics of Quantum Electronics (PQE XXXVI), Snowbird, Utah, Jan. 2006 (Session Organizer).
84. "Control of Decoherence and Translational-Internal Entanglement", SCALA Meeting, IHP, Paris, Jan 2006.
85. "Control of Multipartite Disentanglement", Workshop on Decoherence & Entanglement in Complex Systems (DEICS III), Eilat, Feb. 2006 (Organizer).
86. "Control of Multipartite Decoherence", SPIE Quantum Information Conference, Gaylord, Florida, Apr. 2006.

87. *"Can We Protect Quantum Information from Decoherence?"*, Canadian Institute for Advanced Research (CIAR) Quantum Information Meeting, Yukon, May 2006.
88. *"Dynamical Control of Decoherence"*, Intl. Conference on Coherent Control of Fundamental Processes in Optics, Nizhniy Novgorod, Russia (Plenary).
89. *"Preventing Multipartite Disentanglement"*, Research Workshop on Frontiers in Quantum Decoherence, The Fields Institute, Toronto, Aug. 2006.
90. *"Few-Photon Nonlinear and Quantum Optics: New Perspectives in Solids and Gases"*, Frontiers in Optics Symposium, Joint OSA&APS Meeting, Rochester, NY, Oct. 2006.
91. *"Few-Photon Nonlinear and Quantum Optics: New Perspectives in Solids and Gases"*, Frontiers in Optics Symposium, Joint OSA & APS Meeting, Rochester, NY, Oct. 2006.
92. *"New Trends in Quantum Mechanics: Preventing Multipartite Disentanglement by Local Modulations"*, Bertino, Italy, Dec. 2006.
93. *"Multipartite Entanglement and disentanglement"*, Physics of Quantum Electronics Snowbird, Utah, USA Jan. 2007 (Plenary).
94. *"Dynamical Control of Noisy Quantum Memory Channels"*, SPIE Intl. Symposium on Microtechnologies for the New Millennium: Conference on Photonics, Gran Canaria, May 2007.
95. *"Universal Dynamical Control of Decoherence and Thermodynamics"*, Ninth Rochester Conference on Coherence and Quantum Optics (CQO9) & Intl. Conference on Quantum Informaiton (ICQI): Joint session. Rochester, NY, June 2007.
96. TAMU/Princeton Summer School on Quantum Optics: 96a) *"Tutorial on single-photon superradiance"* (Tutorial) 96b) *"Can we Violate the Second Law of Thermodynamics?"*
97. *"Zeno Heating and anti-Zeno Cooling"*, Intl. Workshop on Cooling and Thermodynamics of Quantum Systems, Safed, Israel, August 2007.
98. *"Dynamical Control of Decoherence and Thermodynamics"*, 2nd Conference on Physics & Control, Potsdam, Germany, September 2007 (Organizer).
99. *"Detection anomalies in space and time"*. ESF Exploratory Workshop on Coherence, Decoherence Entanglement on Non-Degenerate Massive Quantum Systems. Vienna, Austria, Oct. 2007.
100. *"Universal Dynamical Control of Decoherence"*, 1st International Conference on Quantum Error Connection, Los Angeles, USA, Oct. 2007.
101. *"Why and How Can We Control Decoherence?"*, The Jerusalem Winter School on Quantum Information, Dec. 2007.
102. *"How Far Can We Push the Quantum-Classical Boundary"*, Physics of Quantum Electronics (PQE), Snowbird, Utah, USA, Jan. 2008 (Plenary).
103. *"Universal Dynamical Control of Decoherence"*, Workshop on Quantum Entanglement and Decoherence, Nara, Japan (Organizer).
104. *"Thermodynamic control by quantum measurements"*, Quantum 2008, Turin Italy, May 2008.
105. *"Universal dynamical control of decoherence"*, Quantum Control, Madrid, May 2008.

106. “*Decoherence control for hybrid systems*”, MIDAS Workshop, TUW Vienna, June 2008.
107. “*Quantum thermodynamic control of entangled systems*” ICQI-OSA, Boston USA, July 2008.
108. “*Control of non-Markovian quantum thermodynamics*”, FQMT, Prague, Aug. 2008.
109. “*Control of temperature and entropy by quantum measurements*”, ICQO, Vilnius, Sept. 2008
110. “*Heating and cooling by Quantum Measurements?*” PQE, Snowbird, Utah, Jan. 2009 (Plenary).
111. “*State transfer in hybrid systems*”, MIDAS Workshop, Saclay France, March 2009.
112. “*Dynamical control of quantum communication channels*”, SPIE, Dresden, May 2009.
113. “*Dynamical control of quantum thermodynamics*”, Laser Physics, Barcelona, July 2009.
114. “*Macroscopic interference in atomic & superconducting systems*”, MIDAS Workshop, Capri, Italy, Sept. 2009.
115. “*Entanglement via the bath*”, Quantum 2010, Turin, Italy, May 2010.
116. “*System–bath entanglement*”, EQEC, Qufu, China, June 2010.
117. “*System-bath entanglement*”, PRACOQSYS, Denmark, June 2010.
118. “*Schroedinger cats in hot baths*”, Frontiers of Nonlinear Physics, Volga, June 2010.
119. “*New Frontiers of Quantum Control*”, Laser Physics, Iguassu, Brazil, Oct. 2010(Plenary).
120. “*Universal optical control of open systems*”, Quantum Control, Harvard, Aug. 2010.
121. “*Quantum decoherence & thermodynamic control*”, Quantum Thermodynamics, Safed, Israel, Aug. 2010 (Organizer).
122. “*Multiatom entanglement via the bath*”, Entanglement in Atomic Systems, Rehovot, Israel, Nov. 2010.
123. “*Bath-induced entanglement*”, Quantum Optics V, Cozumel, Mexico, Nov. 2010.
124. “*Bath-induced entanglement*”, Quantum Entanglement, Trieste, Italy, Feb. 2011.
125. “*Dynamical control of entanglement*”, FRISNO, Aussoix France, March 2011.
126. “*Dynamical control of decoherence & thermodynamics*”, KITPC, Beijing, April 2011.
127. “*The Zeno and anti-Zeno Paradigms*”, CLEO, Baltimore, May 2011(Key note, the Zeno Symposium).
128. “*Control of bath-induced entanglement*”, QCIC, Ottawa, June 2011.
129. “*System-bath correlation effects in thermodynamics*”, FQMT, Prague, July 2011.
130. “*Lamb-Shift induced entanglement*”, Adv. Quant. Opt., Jackson Hole Wyoming, July 2011.
131. “*Quantum heat engines on non-Markovian time-scales*”, CQIC, Toronto, Aug 2011.
132. “*Breaking the work-information bound in quantum thermodynamics*”, Singapore, Feb 2012.
133. “*Quantum measurements can transgress Maxwell’s demon bounds*”, Quantum 2012, Turin, Italy, May 2012.

134. “*Breaking the Szilard-Landauer bound*”, Laser Physics, Calgary, Canada, July 2012.
135. “*Quantum bath refrigeration towards absolute zero: unattainability principle challenged*”, PRACOQSYS, Tokyo, Sept. 2012.
136. “*Quantum hybrid systems*”, Quantum Hybridium EU Workshop, Ischia, Italy, Oct. 2012 (Organizer).
137. “*Revisiting thermodynamic bounds in non-Markovian dynamical control*”, Quantum Control Conference, KITPC, Santa Barbara, CA, March 2012.