

**Lev VAIDMAN**

*Homepage:* [www.tau.ac.il/~vaidman](http://www.tau.ac.il/~vaidman)

**Education**

<i>Period of Study</i>	<i>Name of University</i>	<i>Subject</i>	<i>Degree</i>	<i>Date of Award</i>
1974 - 1976	Hebrew University	Physics & Mathematics	B.Sc	1976
1980 - 1982	Weizmann Institute	Physics	M.Sc.	1982
1982 - 1987	Tel-Aviv University	Physics	Ph.D.	1987

**Academic and professional experience**

2005 - present	U. of Tel-Aviv	Full Professor
1998 - 2005	U. of Tel-Aviv	Associate Professor
2000 - 2001	Centre for Quantum Comp., Oxford U-ty	Visiting Professor
1995 - 1998	U. of Tel-Aviv	Senior Lecturer
1998 April -June	Institute of Advanced Studies, Jerusalem	Visiting Professor
1996 July -August	ITP, U. of California, Santa-Barbara	Visiting Professor
1996 February-March	Inst. of Exp. Physics, U. of Innsbruck	Visiting Professor
1990 - 1995	U. of Tel-Aviv	Senior Research Associate
1987 - 1990	U. of South Carolina	Assistant Visiting Professor
1986 - 1987	U. of Tel-Aviv	Senior Teaching Assistant

### C. Active participation in scientific meetings.

- 1985 Microphysical Reality and Quantum Formalism, Urbino, Italy.
- 1986 New Techniques and Ideas in Quantum Measurements Theory, New-York.
- 1987 Frontiers of the Philosophy of Quantum Mechanics, Philadelphia.
- 1988 Bell's Theorem, Quantum Theory and Conceptions of the Universe, Fairfax, MD.
- 1989 62 Years of Uncertainty: Inquiries into the Found. of Quantum Mechanics, Erice.
- 1989 Fundamental Aspects of Quantum Theory, Columbia, SC.
- 1989 Annual Meeting of South Carolina Philosophy Society.
- 1990 Workshop on Foundations of Quantum Mechanics, Santa Fe, NM.
- 1991 Annual Meeting of Israel Psychology Society.
- 1992 Fundamental Aspects of Quantum Theory, Columbia, SC.
- 1992 Annual Meeting of Israel Physical Society, Rehovot.
- 1992 Quantum Physics and the Universe, Tokyo.
- 1992 International Symposium on Foundations of Quantum Mechanics, Tokyo.
- 1992 Quantum Control & Measurement, Tokyo.
- 1992 International Workshop on Quantum Optics, Rehovot.
- 1993 Annual Meeting of Israel Physical Society, Tel-Aviv.
- 1993 International Workshop on Squeezed States and Uncertainty Relations, Maryland.
- 1993 Symposium on the Foundations of Modern Physics, Cologne.
- 1993 International Symposium on Fundamental Problems in Quantum Physics, Spain.
- 1994 Advances in Quantum Phenomena, NATO Advanced Study Institute, Erice.
- 1994 Fundamental Problems of Quantum Theory, NYAS meeting, Baltimore.
- 1994 Quantum Computation, Turin, Italy.
- 1995 Quantum Theory without Observers, Bielefeld, Germany.
- 1995 60 Years of EPR, Haifa.
- 1996 Quantum Interferometry II, Trieste, Italy.
- 1996 Quantum Computation, Turin, Italy.
- 1996 Geometric Issues in the Foundations of Science, Oxford, England
- 1996 Annual Meeting of the British Philosophy of Science Society, Oxford, England
- 1997 Quantum Computation, Turin, Italy.
- 1997 Fundamental Problems of Quantum Theory, Baltimore.
- 1998 FRISNO5, Nonlinear and Quantum Optics, Eilat, Israel.
- 1998 Quantum Computation, Turin, Italy.
- 1998 Quantum Computation and Communication, Benasque, Spain.
- 1998 Mysteries and Puzzles in Quantum Theory, Lake Garda, Italy
- 1998 Mathematical and Conceptual Foundations of Quantum Theory, Nottingham, UK.
- 1999 Annual Meeting of Israel Physical Society, Tel-Aviv.
- 1999 Complexity, Computation and the Physics of Information, Cambridge, UK.
- 2000 Quantum Information Theory, Haifa, Israel.
- 2000 International Conference on Quantum Optics, Raubichi, Belarus
- 2000 The Conceptual Foundations of Statistical Mechanics, Jerusalem, Israel
- 2000 Mysteries and Puzzles in Quantum Theory, Lake Garda, Italy
- 2000 Annual Meeting of the British Philosophy of Science Society, Birmingham, UK

2000 Quantum Measurement and Information, Viena, Austria.  
 2000 Bell Symposium, Viena, Austria.  
 2001 Aharonov Symposium, Tel-Aviv, Israel.  
 2001 Reconsideration of Foundations of Quantum Mechanics, Vaxho, Sweden 2001  
 2001 XXII Solvay Conference in Physics, Delphi, Greece.  
 2002 International Symposium “Quantum Informatics-2002”, Moscow, Russia.  
 2003 International Workshop “Quantum Processes and Modern Electronics III” Holon.  
 2003 QUBIT 2003 Celebrating Ten Years of Teleportation, Haifa, Israel.  
 2004 Quantum Theory without Observers II, Bielefeld, Germany.  
 2004 Quantum Informatics-2004, Moscow, Russia (Member of the Advisory Board).  
 2004 Quantum Information Theory, Cambridge, UK.  
 2005 Squeezed States and Uncertainty Relations, Besancon, France  
 2005 Time-Symmetry in Quantum Mechanics, Sydney, Australia  
 2006 Quantum Dynamics of Cold Atoms and Light, Eilat, Israel  
 2006 Decoherence, Quantum Measurements and the Arrow of Time Beuggen, Germany  
 2006 Quantum Foundations and Technology, Hangzhou, China  
 2007 Weak Values and Weak Measurements, Phoenix AZ  
 2007 The Everett Interpretation of Quantum Mechanics: 50 years, Oxford, UK  
 2008 Quantum Entanglement and Decoherence, Boston, USA  
 2008 The Clock and the Quantum: Time in Quantum Foundations, Phoenix, AZ, USA  
 2008 DICE, Quantum Mechanics through Complexity to Spacetime, Gargano, Italy  
 2008 The Probable and the Improbable: The Role of Probability in Physics, Jerusalem  
 2009 FRISNO 10 French-Israel Symposium on Quantum Optics, Ein Gedi, Israel  
 2009 50 years of the Aharonov-Bohm Effect, Tel Aviv, Israel (Conference Organizer)  
 2009 Quantum Mechanics and Physical Reality, Sesto, Italy  
 2009 Mathematical and Geometrical Explanation in Physics, Bristol, UK  
 2010 Philosophy of Physics: Current Directions, Moscow, Russia  
 2010 International Program on Quantum Information, Bhubaneswar, India  
 2010 ONR Entanglement Beyond the Optical Regime, Los Angeles, USA  
 2010 21st-Century Directions in de Broglie-Bohm Theory and Beyond, Tuscany, Italy  
 2011 14th Congress of Logic, Methodology and Philosophy of Science, Nancy, France  
 2011 Why the Quantum? Arizona, US  
 2012 New Directions in Foundations of Physics, Washington, DC  
 2012 Quantum Mechanics without Observers, Sesto, Italy  
 2012 Fundamental Aspects of Quantum Theory, Orange CA  
 2013 Foundations of Physics, Munich  
 2013 14th International Meeting on Optical Engineering and Science, Tel Aviv  
 2013 Coherence and Quantum Optics, Rochester, USA  
 2013 Quantum Information and Measurement, Rochester, USA  
 2014 BergeFest, Quantum Optics and Foundations, Singapore  
 2014 21th Central European Workshop on Quantum Optics, Brussels, Belgium  
 2014 2 International Summer School in Probabilities in Physics, Black Forest, Germany  
 2014 Free Will and Retrocausality in a Quantum World, Cambridge, UK  
 2014 Foundations of Quantum Mechanics dedicated to John Bell, Sesto, Italy

2014 Quantum Foundations, Zurich, Switzerland  
 2014 Quantum, Nano, and Nonlinear Optics, Cancun, Mexico  
 2014 3rd Latin America Optics and Photonics Conference, Cancun, Mexico  
 2014 Coherence and Control in the Quantum World, Rehovot, Israel  
 2015 Weak Value and Weak Measurement, Tokyo, Japan  
 2015 Symposium of National Quantum Information Centre, Sopot, Poland  
 2015 Quantum Theory: from Problems to Advances, Vaxho, Sweden  
 2015 Quantum (and Classical) Physics with Non-Hermitian Operators, Jerusalem, Israel  
 2015 3rd Int. School in Philosophy of Physics: The Ontology of Physics, Saig, Germany  
 2015 5th International Conference on Quantum Cryptography, Tokyo, Japan  
 2015 Emergent Quantum Mechanics, Vienna, Austria  
 2015 The Time Machine Factory, Torino, Italy  
 2015 Workshop on Interpretation of Quantum Mechanics, Patna, India  
 2015 International Conference on Quantum Foundations, Patna, India  
 2016 Quantum and Beyond, Vaxho, Sweden  
 2016 Concepts and Paradoxes in a Quantum Universe, Perimeter Institute, Canada  
 2016 Identity, Indistinguishability and Non-locality in Quantum Physics, Buenos Aires, Argentina  
 2016 Quantum Science: Implementations, Benasque, Spain.  
 2016 Concepts and Paradoxes in a Quantum Universe, Waterloo, Canada  
 2016 2nd International Conference on Quantum Foundations, Patna, India  
 2017 SANDU International Conference on Quantum Physics, Crisan, Romania  
 2017 7th International Conference on Quantum Cryptography, Cambridge, UK  
 2017 Foundations of Quantum Mechanics and Technology, Vaxho, Sweden  
 2017 The Relativistic Quantum Information, Kyoto, Japan  
 2017 Fundamental Aspects of Quantum Mechanics as they Relate to AMO Physics, Tokyo, Japan  
 2017 From Foundations of QM to Quantum Metrology and Sensing, Turin, Italy  
 2017 3rd Symposium Emergent Quantum Mechanics, London, UK  
 2017 6th International Conferene on New Frontiers in Physics, Crete, Greece  
 2017 ISF-NSFC workshop on quantum communication and sensing, Jerusalem, Israel  
 2017 3rd International Conference on Quantum Foundations, Patna, India

#### D. Invited Lectures

2001 Centre of Quantum Computation, Oxford, UK  
2002 Russian Academy of Science, Saint Petersburg, Russia  
2004 Technion, Haifa Israel  
2004 DAMPT Cambridge, UK  
2005 Einstein Lecture, Tel Aviv Israel  
2005 Asher Peres Memorial Lecture, Haifa, Israel [Colloquium]  
2009 Imperial College, London, UK  
2009 California Institute of Technology, USA  
2010 Ben Gurion University, Beer Sheva, Israel [Colloquium]  
2010 Lebedev Institute, Moscow, Russia  
2010 CQT Singapore [Colloquium]  
2011 University of Toronto, Canada  
2011 Sapienza Universita di Roma, Italy  
2012 DAMPT Cambridge, UK  
2012 Hefei, China  
2013 LMU, Munich  
2013 MPQ, Munich  
2013 Bristol University, UK  
2013 Columbia University, NY  
2013 Moscow University, Russia  
2014 Wroclaw University, Poland [Colloquium]  
2015 Centrum Wiskunde and Informatica, Amsterdam  
2015 University of Tsukuba, Japan  
2015 Tokyo University, Japan [Colloquium]  
2015 Osaka University, Japan  
2015 University of Crete, Greece [Colloquium]  
2016 Rutgers University, New Jersey  
2016 QuICS, University of Maryland, Washington DC  
2016 Metro Area Philosophers of Science, New York  
2016 Bristol University, UK  
2016 Oxford University, UK  
2017 Osaka University, Japan  
2017 Hiroshima University, Japan  
2017 KEK, Japan  
2017 RIKEN, Japan  
2017 Tel Aviv University, [Colloquium]  
2017 Weizmann Institute, [Colloquium]

## E. Academic and professional awards.

2016- The Alex Maguy-Glass Chair in Physics of Complex Systems

2015-2017 The German-Israel Foundation for Scientific Research and Development Grant No. I-1275-303.14 *Experimental studies of non-classical features of quantum systems* Principal Investigator together with Harald Weinfurter, LMU.

2014-2018 The Israel Science Foundation Grant No.1311/14 *Nonlocality in Quantum Mechanics and the Aharonov-Bohm Effect*, Principal Investigator together with Y. Aharonov, U. of Tel-Aviv.

2010-2013 The Israel-USA Binational Grant *Harnessing new quantum technologies* Principal Investigator together with P. Kwiat.

2010-2013 The Israel Science Foundation Grant No.1125/10 *Exploring Weak Values*, Principal Investigator together with Y. Aharonov, U. of Tel-Aviv.

2007-2010 The Wolfson Foundation Grant, Principal Investigator together with B. Reznik and Y. Aharonov.

2004-2007 Quantum Information Processing & Communications FET Proactive Initiative in the 6th European Framework Programme Principal Investigator together with B. Reznik, O.Regev and A. Ta-Shma,

2002-2003 The Ministry of Defense Grant No. 29388741 *Quantum Cryptography* Principal Investigator together with T.Mor, A. Arieh, Y. Aharonov and B. Reznik, U. of Tel-Aviv.

2001-2004 The Israel Science Foundation Grant No.62/01 *Fundamental Problems in Quantum Theory*, Principal Investigator together with Y. Aharonov and B. Reznik, U. of Tel-Aviv.

1998-2001 The Israel Science Foundation Grant No. 471/98 *Fundamental Problems in Quantum Theory*, Principal Investigator together with Y. Aharonov, U. of Tel-Aviv.

1995-1997 The Israel Science Foundation Grant No. 614/95 *A Novel Approach to Fundamental Problems in Quantum Theory*, Principal Investigator together with Y. Aharonov, U. of Tel-Aviv.

1991-1993 The Israel Science Foundation Grant No. 425/91 *New Approach to Fundamental Problems in Quantum Theory*, Principal Investigator together with Y. Aharonov and D. Rohrlich, U. of Tel-Aviv.

1990 National Science Foundation Grant No. PHY-9008048 *Geometric Phase and Quantum Coherence*, Principal Investigator together with Y. Aharonov and J. Anandan, USC.

1972 First Prize in Physics Olympiad between all high school students of USSR

## **F. Membership in professional societies.**

American Physics Society, 1988-91.

South Carolina Philosophy Society, 1989-90.

Israel Physical Society, from 1992.

New-York Academy of Science Society, 1987-88, 1995-1996.

American Philosophy of Science Society, from 1993.

## **G. Editing**

1994 - Archive *quant-ph*, Moderator

2014 - Quantum Studies: Mathematics and Foundations, Managing Editor

2009 - International Journal of Quantum Information, Member of Editorial Board

2010 Special issue of Journal of Physics A: Quantum phases: 50 years to the Aharonov-Bohm Effect and 25 years to the Berry phase, Guest Editor.

2007-2009 American Journal of Physics, Member of Editorial Advisory Board.

**H. Referee** in the last years:

American Journal of Physics  
Axioms  
Entropy  
British Journal for the Philosophy of Science  
European Journal for Philosophy of Science  
European Physical Journal D  
Europhysics Letters  
Foundations of Physics  
Frontiers  
Journal of Physics A  
Journal of Mathematical Physics  
International Journal of Modern Physics B  
International Journal of Quantum Information  
International Journal of Distributed Sensor Networks  
Nature  
Nature Physics  
New Journal of Physics  
Optics Express  
Physical Review A  
Physical Review Letters  
Proceedings of the National Academy of Sciences  
Proceedings of the Royal Society A  
Scientific Reports  
SIAM Journal on Computing  
Synthese  
Studies in History and Philosophy of Modern Physics  
Quanta  
Quantum Information and Computation  
Quantum Information Processing  
Quantum Studies: Mathematics and Foundations  
Results in Physics

**Grant proposals**

Austrian Science Fund  
Chinese Academy of Sciences  
John Templeton Foundation  
Israel Science Foundation  
National Science Centre, Poland  
National Science Foundation (USA)  
The Netherlands Organisation for Scientific Research, Vici Grant  
US - Israel Binational Science Foundation



## I. Students and their current positions

Kelvin McQueen	Post Doc student	
Kevin Rosenzweig	M.Sc. Internship	
Nimrod Ben Shalom	M.Sc. student	
Alon Ben Israel	M.Sc. student	
Ariel Danan	M.Sc. 2008, Ph.D. soon	
Eliahu Cohen	Ph.D. 2015	Post Doc in Bristol University
Yaron Kedem	Ph.D. 2013	Post Doc in Nordita Sweden
Demetry Farfurnik	M.Sc. 2013	Ph.D. physics student Hebrew U-ty Jerusalem
Naama Hallakoun	M.Sc. 2013	Ph.D. physics student Tel Aviv
Gillie Naaman-Marom	M.Sc. 2012	Lecturer in Science College, Israel
Aharon Brodich	M.Sc. 2008	Post Doc U-ty of Waterloo Canada
Nathanel Aharon	M.Sc. 2008, Ph.D.2013	Post Doc in Hebrew U-ty Jerusalem
Alex Retzker	Ph.D. 2006	Head of quantum group, Hebrew U-ty Jerusalem
Tamar Ravon	M.Sc. 2006	Ph.D. student Physics Tel Aviv
Izhar Nevo	M.Sc. 2005	Engineer in ECI telecom
Amir Kalev	M.Sc. 2004	Post Doc University of New Mexico
Zion Mitrany	M.Sc. 2004	
Berry Groisman	Ph.D. 2003	Lecturer in DAMPT, Cambridge
Nadav Yoran	Ph.D. 2003	Technical Expert in Korakh and Co.
Ori Belkind	M.Sc. 1998	Lecturer in Philosophy of Sci. at Tel Aviv U-ty
Lior Goldenberg	M.Sc. 1995, Ph.D.2004	Founder of Beyond Counting Systems Int.

## K. Informal brief CV

Lev Vaidman, born at 1955, knew that he will be a physicist since meeting a physics teacher Demitry Vinitzky in Leningrad's secondary school. After one year at Leningrad's University he moved to Israel and got the B. Sc. degree from Hebrew University in Jerusalem and then, after the army service, the M. Sc. degree from Weizmann Institute in Rehovot. He started his work on foundations of quantum mechanics at Tel-Aviv university under supervision of Yakir Aharonov and got his Ph.D. at 1987. After spending three years at the University of South Carolina he came back to the physics department of Tel-Aviv university where he become full professor at 2005.

Vaidman's main achievements are:

- Teleportation of continuous variables
- 3-box paradox (with Y. Aharonov)
- Weak measurements (with Y. Aharonov and D. Albert)
- Interaction-free measurements (with A. Elitzur)
- Cryptography with orthogonal states (with L. Goldenberg)
- Quantum Gambling (with L. Goldenberg)
- Error prevention protocol (with L. Goldenberg and S. Wiesner)
- Protective measurements (with Y. Aharonov)
- Non-local measurements (with Y. Aharonov and S. Popescu)
- Modular values (with Y. Kedem)
- Theoretical and experimntal analysis of the past of a quantum particle
- Local explanation of the Aharonov-Bohm Effect
- Analysis of quantum counterfactuals
- Probability in the framework of the many-worlds interpretation