

האקדמיה הלאומית הישראלית למדעים The Israel Academy of Sciences and Humanities









ADAMS SEMINAR 2014 סמינר אדאמס תשע״ד

With the participation of Mr. Marcel Adams of Canada

Guest Lecturer

Professor Dan Shechtman

Academy Member, Nobel Laureate in Chemistry Technion-Israel Institute of Technology



Professor Dan Shechtman

Academy Member and Nobel Laureate in Chemistry Technion – Israel Institute of Technology

After completing his doctoral studies at the Technion – Israel Institute of Technology in Haifa, Dan Shechtman spent three years as a National Research Council (NRC) fellow in the Aerospace Research Laboratories at Wright Patterson Air Force Base, Ohio. In 1975 he joined the Department of Materials Science and Engineering at the Technion, where he is currently a Distinguished Professor.

Between 1981 and 2004 he spent several sabbaticals at Johns Hopkins University, in the joint program with the National Institute of Standards and Technology (NIST; formerly the National Bureau of Standards – NBS). During this period, using transmission electron microscopy (TEM), he discovered the Icosahedral Phase, which opened the new science of quasiperiodic crystals.

As of 2004 he is also a Professor in the Department of Materials Science and Engineering (MSE) and Ames Lab, Iowa State University. His current research centers on developing strong and ductile magnesium alloys for a variety of applications.

Shechtman is a member of several academies, including the US National Academy of Engineering and the Israel Academy of Sciences and Humanities. He is an honorary member of professional societies around the world and has been awarded many prizes, including the Wolf Prize in Physics, the Gregori Aminoff Prize of the Royal Swedish Academy of Sciences, the European Materials Research Society (EMRS) Award and the Nobel Prize in Chemistry (2011).





Introductory remarks by

Professor Ruth Arnon

President of the Israel Academy

I am very pleased to greet our new Adams Fellows for 2014–2015 here at the Israel Academy of Sciences and Humanities. Since the inauguration of the Adams Fellowship Program in May of 2005, 87 Adams Fellows, PhD Students of the highest academic standing, have been inducted. I am proud to report that four of the six winners of the 2013 Israel Chemical Society awards for outstanding graduate students were won by Adams Fellows! We are happy to introduce this year's eight new fellows briefly in this brochure.

In the framework of the Adams Fellowship Program, Adams Fellows enjoy sustained financial support for three to four uninterrupted years of doctoral study. In the past year, the amount of the grant was increased to compensate for inflation and currency fluctuation and to maintain the prestige of the Adams Fellowships. The Fellows also enjoy two privileges unique to this graduate student support program. Each Adams Fellow is eligible for an annual international study grant of \$3,000, to be used for active participation in an international scientific conference/workshop, for laboratory study abroad, for international scientific collaboration or to interview for a postdoctoral position, provided the trip is intended to contribute meaningfully to his/her scientific career. Adams Fellows are also given the opportunity to interact with one another and to form a small science community of their own, through initiatives such as invited lectures by renowned scientists at annual seminars, conferences and field trips.

Once again, I would like to extend my heartfelt admiration and appreciation to Mr. Marcel Adams for playing such a meaningful role in the support of Israel's outstanding young scientists. I would also like to congratulate him on the occasion of his 94th birthday and wish him many more years of health and productivity.

ADAMS Fellowship Steering & Selection Committee



Professor Amiram Grinvald, Chairman



1.

Professor Moty Heiblum



Professor David Kahzdan



Professor Abraham Nitzan



Professor Moshe Oren



Professor Moti Segev

Former Committee Members

Professor Itamar Willner,
Immediate Past Chairman
Professor Chaim Cedar, Past Chairman
Professor Yoram Groner, Past Chairman
Professor Yakir Aharonov

Professor Noga Alon Professor Moshe Moshe Professor Yosef Shiloh Professor Yigal Talmi Professor Jacob Ziv





Professor Amiram Grinvald

Chair of the Adams Fellowship Committee

Dear Friends,

As Chair of the Academic Committee of the Adams Fellowship Program, I am delighted, in opening the traditional Seminar of the Adams Program, to extend my warm greetings to

all of the Adams Fellows and particularly to our new fellows.

It is well known that Israel excels in the realm of basic research. Israel, a small country with few academic institutions, has gained international recognition at the highest level for its pioneering and creative research. No other country in the world has attained comparable achievements per capita. The nucleus for this success is clearly the brilliant and hard-working emerging scholars who are in the front line of these research efforts. Israel is blessed with a wonderful cadre of top-notch, well informed, highly motivated, mature students, who not only provide the intellectual infrastructure for basic research, but also represent future generations of senior scientists. Not surprisingly, Israeli postdoctoral researchers are highly in demand in the USA and other nations that lead in scientific research. A fraction of these students, together with their gifted colleagues, constitute the foundation of future scientific research in Israel.

The Adams family tree is growing well. This year, as in previous years, the Fellowship Committee was faced with difficult decisions. We had many outstanding candidates, and the competition was tough. Nevertheless, we believe that we have made very good choices. The successful academic appointments of Adams alumni attest to the program's success. I expect to see these young scientists become research leaders in Israel. We were very proud to learn that four of the six recipients of the Israel Chemical Society awards for outstanding graduate students were Adams Fellows: Ariel Afek, Assaf Ben Moshe, Sophia Buhbut and David Tsivion. Congratulations!

The Adams Fellows are a real family. Beyond the increased financial backing of the fellows, the program has turned into a social and scientific forum for the exchange of ideas and for collaboration.

This year we celebrate the 94rd birthday of Mr. Marcel Adams. This is a wonderful occasion to express our thanks to the man who has had the motivation and the vision to promote science in Israel by funding multiple programs. All of us wish Mr. Adams many more healthy years!

Best wishes,

Amiram grinvald

Amiram Grinvald

ADAMS Seminar 2013













(clockwise)

New Adams Fellow Assaf Manor, receiving his certificate from Mr. Adams and Prof. Willner Prof. Ruth Arnon and Mr. Marcel Adams Adams family and friends in the lobby Mr. Adams showing his birthday gift – a plaque of Jerusalem as the center of the universe Prof. Aaron Ciechanover and Prof. Arnon, with Mr. Marcel Adams and his son Sylvan Center – Prof. Ciechanover delivering his lecture on "The Revolution of Personalized Medicine"





Marcel Adams

Hebrew-speaking philanthropist Marcel Adams, who escaped from a forced-labor camp in Romania in 1944, fought in Israel's War of Independence and made his fortune in Montreal, has endowed the Adams Fellowship Program to support Israel's brightest doctoral students in the natural and exact sciences each year.

Marcel Adams (Abramovich) was born in Piatra-Neamt, Romania, in 1920. The anti-Semitic regime in Romania during the Holocaust interrupted his studies, triggering a lifelong quest for learning and a zest for the life of the mind. An active member of Hanoar Hazioni in Bucharest, Adams survived forced labor, food shortages and arbitrary harassment by the authorities.

After coming to Israel with the Jewish Agency's help in 1944, Adams settled in Pardes Hanna and participated in the War of Independence. He moved to Canada in 1951 and worked as a tanner before going into real estate. He eventually developed dozens of properties, mostly in eastern Canada, including Galeries de la Capitale, the largest shopping mall in the province of Quebec. With his late wife Annie, he established Tel-Aviv University's Adams Institute for Business Management Information Systems and endowed the university's Adams Super Center for Brain Research. A Montreal resident, the proud father of four and grandfather of eleven, he remains full of energy, works a full week and looks at least a decade younger than his 94 years.

Adams officially signed an agreement to establish the Adams Fellowships with the Israel Academy of Sciences and Humanities in Jerusalem in May 2005. The fund is large enough to provide \$1 million annually to outstanding PhD students, covering their full tuition and living expenses throughout four years of study and including funds for scientific study trips abroad. Most recipients are aged 26 to 34.

The easy way would have been to hand over a check, but Adams wishes to pay back his 1944 debt to the Jewish people, which gave him a new identity and hope for rebuilding from the ashes of Europe. The fellowship helps young men and women thrive technologically, scientifically and intellectually. In turn, Adams believes they will carry the flag for the next generation and for future generations.

A professional committee at the Academy reviews applications from doctoral students and chooses the awardees, for study in such fields as organic chemistry, molecular biology, chemistry, mathematics, engineering, physics, genetics, computer science and brain research.

Marcel. Adams wishes to help the best and brightest academics, those with tremendous potential for growth, who have demonstrated excellence in both quality of mind and personal character.

This year's newly appointed Adams Fellows represent the Tenth Cycle of the Adams Fellowship Program.

ADAMS Fellows 2014-2015



Rivka Bekenstein

PhD student of Prof. Mordechai Segev, Faculty of Physics, Technion-Israel Institute of Technology Dissertation topic: Gravitational Phenomena and Complex Wavepackets in Nonlinear Optical Systems

Rivka Bekenstein, raised in Jerusalem, has been interested in science since childhood. Following her military service, she began studying physics at The Hebrew University of Jerusalem. During her second year, while participating in an exclusive lab course supervised by Prof. Zvi Ovadiahu, she became interested in experimental physics. Her fascination with nonlinear physics came soon thereafter, in the course of her work on a research project in the laboratory of Prof. Jay Feinberg, and she chose to pursue this topic in graduate school.

Rivka is now pursuing a direct PhD at the Technion, in the Nonlinear Optics group led by Distinguished Professor Mordechai Segev. The group studies light-matter interactions, quantum simulations and a variety of other topics, both theoretically and experimentally. Rivka's research focuses on gravitational phenomena in optical systems. Her short-term goal is to observe various optical phenomena that are analogous to gravitational effects. More specifically, she is exploring the dynamics of light in nonlinear materials and in curved geometries that are analogous to curved space-time in general relativity. To date, her research has resulted in several intriguing findings. For instance, she has found complex electromagnetic wavepackets that propagate on non-geodesic trajectories in non-trivial curved-space geometries. Likewise, she has recently demonstrated experimentally the optical analogues of gravitational tidal forces and redshift/blueshift in the vicinity of massive stars that are able to bend the space-time continuum.

The main goal of Rivka's research is to demonstrate hitherto unobserved effects in quantum mechanics and gravitation, using nonlinear optical settings. Most importantly, she hopes to continue exploring new physical phenomena, theoretically and experimentally, and never to stop being fascinated by new findings.



Sharon Fleischer

PhD student of Dr. Tal Dvir, Dept. of Molecular Microbiology and Biotechnology, Faculty of Life Science, Tel-Aviv University Dissertation topic: Engineering 3D Cardiac Stem Cell-Based Patches for Treating Heart Diseases

Sharon Fleischer was born and raised in Rehovot. After her military service in Air Force intelligence, Sharon began her BSc studies in biotechnology, an interdisciplinary program at Tel-Aviv University

Sharon became interested in the field of tissue engineering as a way to improve the lives and health of others. After commencing her MSc studies in Tel-Aviv University's Lab for Tissue Engineering and Regenerative Medicine under the supervision of Dr. Tal Dvir, her enthusiasm for this field of study led her to enter the direct PhD program.

Combining principles from engineering, chemistry and materials and life sciences, Sharon's research aims to design a 3D engineered microenvironment to control the fate of cardiac stem cells. This microenvironment includes synthetic fibers resembling the cardiac extracellular matrix as well as controlled release systems to supply essential biomolecules to the cells. Using this microenvironment, Sharon plans to develop, for the first time, a clinically relevant cardiac patch.

So far, Sharon has published her work in three papers in prestigious journals and has written a review article discussing nanotechnological strategies in tissue engineering. She is the recipient of a "Women in Science" scholarship from the Israel Ministry of Science.

Sharon is head of teaching assistants in the Molecular Biology course at Tel-Aviv University and received the Dean's Award for outstanding performance in teaching assistance.





Yannai A. Gonczarowski

PhD student of Prof. Sergiu Hart and Prof. Noam Nisan, Institute of Mathematics, School of Computer Science & Engineering and Center for the Study of Rationality, The Hebrew University of Jerusalem

Dissertation topic: Game Theory and Mechanism Design

Yannai Gonczarowski, born and raised in Jerusalem, became fascinated with science and programming at an early age. As a high school senior, he taught an advanced computer class at his school, based on a curriculum that he developed. Yannai served in IDF military intelligence for four years as an algorithmic researcher and project leader, and toward the end of his service also as an instructor.

Yannai received his BSc in the "Amirim – Science" program for excellence at The Hebrew University of Jerusalem. Concentrating in both mathematics and computer science, he graduated *summa cum laude* as class valedictorian. He obtained his first scientific result in the first semester of his BSc studies: a novel game-theory theorem that he phrased and proved during an introductory course on discrete mathematics. This result was later published as a journal paper.

Yannai did his MSc research in mathematics at the Hebrew University under the joint advisorship of Prof. Gil Kalai (Mathematics, HUJI) and Prof. Yoram Moses (Electrical Engineering, Technion), graduating *summa cum laude*.

For his PhD, Yannai returned to game theory. He is studying game theory and mechanism design from both a mathematical and an algorithmic point of view, under the joint advisorship of Prof. Sergiu Hart (mathematics) and Prof. Noam Nisan (computer science). Yannai has already published several research papers and has presented his work at leading international conferences.

In addition to his research, Yannai is a passionate educator. He has been a teaching assistant at the Hebrew University since his second year as a BSc student and has repeatedly appeared on the list of outstanding teachers in the Faculty of Science. Last year he was ranked first among all computer science and engineering lecturers and teaching assistants after serving as a lecturer in a mandatory introductory course for computer science students.

Concurrently with his scientific studies, Yannai acquired a BMus and an MMus in Classical Singing at the Jerusalem Academy of Music and Dance. He has performed in professional opera productions and with Israel's leading orchestras.



Ouri Karni

PhD student of Prof. Gadi Eisenstein, Faculty of Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Ultra-Fast Non-Linear Dynamic Processes in Nanometric Semiconductor Lasers and Optical Amplifiers

Ouri Karni was born and raised in Haifa and attended the Hebrew Reali School. His attraction to science in general and to physics in particular led him to continue straight on to study for a BA in physics and a BSc in electrical engineering at the Technion, in the framework of the IDF's "Psagot" reserve program for outstanding students. During this period he discovered his affection for the boundary between fundamental and applied physics. Specializing in electro-optics, he graduated *summa cum laude*.

After completing his military service, Ouri returned to the Technion to join a direct PhD track under the supervision of Prof. Gadi Eisenstein. His research explores, both experimentally and theoretically, the ultra-fast dynamic mechanisms acting in semiconductor optical amplifiers, which employ quantum-dots as the active medium. These devices exhibit a wide variety of phenomena, including non-linear wave propagation, different relaxation processes of the charge-carrier populations, and quantum-mechanical effects similar to Rabi oscillations. The goal of their study is, ultimately, to utilize these quantum-dot devices as platforms for sophisticated future communication systems.

Ouri is a teaching assistant in basic undergraduate courses in the field of electromagnetic waves and semiconductor optical devices. In his spare time, he has been an active orienteer for the past decade, mostly as a member of the Technion orienteering team.

ADAMS Fellows 2014-2015



Jonathan Mosheiff

PhD student of Prof. Nati Linial, Institute of Computer Science, The Hebrew University of Jerusalem Dissertation topic: Forbidden Induced Subgraphs and their Structural Implications

Born and raised in Jerusalem, Jonathan Mosheiff was first exposed to computer programming at

home, at the age of seven. While in high school, this interest led him to compete as a member of the Israeli team in the International Olympiad in Informatics (IOI). Training for this competition, Jonathan was introduced to algorithms and combinatorics and fell in love with the field. He eventually won four silver medals as a representative of Israel in international competitions. During high school, Jonathan studied toward a BSc in computer science and mathematics at the Hebrew University and graduated *magna cum laude*. He then served for five years in the IDF as an algorithmic researcher and team leader. After the army, he went on to study for an MSc in computer science at the Hebrew University. His MSc thesis, under the supervision of Prof. Orna Kupferman, dealt with the decomposition of regular languages, a theoretical subject with possible applications in the field of formal verification. He was awarded his degree *summa cum laude*.

After finishing his MSc, Jonathan began working toward a PhD under the supervision of Prof. Nati Linial. His current research, in the field of Graph Theory, deals with local profiles of graphs. The graph, an important mathematical structure representing a binary relation on a set of objects, is relevant to many different areas of mathematics and computer science. For example, a graph can be used to describe all the friendships within a group of people. Jonathan's research concerns properties of graphs that can be determined even if we are given only information about a part of the substructure of the graph, and not the graph itself.

In addition to his research, Jonathan coaches the Israeli team for the International Olympiad in Informatics – the same team in which he was once a contestant. He also created an algorithmic problem-solving course at the Hebrew University, which he teaches together with a fellow PhD student.



Omri Ram

PhD student of Prof. Oren Sadot, Department of Mechanical Engineering, Ben-Gurion University of the Negev Dissertation topic: Experimental Study of Shock and Blast Wave Interaction with a Rigid Porous Medium.

Omri Ram has always been passionate about all things mechanical. This passion led him to pursue mechanical engineering studies at Ben-Gurion University of the Negev in his home town of Beer Sheva. Omri joined the shock tube laboratory team at BGU as a research assistant during his undergraduate studies. As his graduation project, he led the development of a novel experimental system that simulates blast waves in a laboratory-scale apparatus. He presented this system and his results at an international conference and published them in the journal *Experiments in Fluids*.

Omri's graduate studies under the supervision of Prof. Oren Sadot involve taking a novel approach to studying the old problem of shock wave interaction with a porous medium. Until now, researchers have focused on the microscopic nature of this interaction. The new approach looks at the porous medium and the surrounding air at the macroscopic level as a lump mechanical system. This approach quickly proved fruitful and instigated interesting new results, offering possible answers to numerous questions on the subject. Realizing the potential of this study, Omri enrolled in the combined MSc–PhD program and took this as his dissertation topic.

Omri has taken part in various other studies in the shock-tube laboratory, in collaboration with the Home Front Command, the Engineering Corps, the Ministry of Defense and others. These include studies of the shock-wave reflection phenomenon, of small-scale structure interaction and of blast-induced traumatic brain injuries and the detection and treatment of related post-traumatic stress disorders.





Einat Seidel Posner

PhD student of Prof. Ofer Mandelbaum, Lautenberg Center for Immunology and Cancer Research, The Hebrew University of Jerusalem Dissertation topic: Viral Immune Evasion Mechanisms

Einat Seidel Posner was born and raised in Jerusalem, where she continues to reside with her husband Alon and their two pet chinchillas. Einat has a sister who is blind from birth, and her mother founded

the Israel Association of Parents of Blind and Visually Impaired Children. From a young age, Einat was drawn to science and especially to biology and medicine, leading her to volunteer in Magen David Adom in Israel in a variety of roles during her high school years and her military service.

After her discharge from the army, Einat applied to the Hebrew University's School of Medicine, where she finished the pre-clinical course *summa cum laude*. Seeking to combine basic scientific research with a medical career, Einat joined the MD–PhD program and took a break from medical school to pursue scientific research under the tutelage of Prof. Ofer Mandelboim. Her research in immunology focuses on Human Cytomegalovirus, a pathogen that causes serious illnesses in congenitally infected babies and people who are immunosuppressed. Einat is working to unravel the mechanisms by which this virus evades natural killer cells, lymphocytes that function as the body's first line of defense against virally infected and cancerous cells. Her hope is to become a physician-researcher and to translate the insights gained in her research into clinical applications.

In her spare time, Einat practices karate, in which she holds a black belt.



Eliran Subag

PhD student of Prof. Ofer Zeitouni, Department of Mathematics, Weizmann Institute of Science Dissertation topic: Extreme Values and Extremal Processes of Gaussian Fields

Eliran Subag was born in Kiryat Motzkin and raised in Kiryat Haim. After completing his army service, he began his studies at the Technion, where he obtained his BSc and MSc in electrical engineering, both *summa cum laude*. Early in his studies he was drawn to the mathematical side of electrical engineering,

and he studied mathematics alongside his regular coursework.

Eliran's curiosity in the field of probability led him to approach Prof. Robert Adler and undertake an undergraduate research project with him. He continued to work with Prof. Adler as his advisor for his Master's degree on the topic of smooth Gaussian fields. Gaussian fields are a model of random functions whose probability law possesses a certain property that is both very natural and useful for computations. In recent decades this field has yielded numerous applications in physics, computer science, and medical imaging.

Eager to continue his work in the field of probability, Eliran joined the Mathematics Department at the Weizmann Institute of Science, where he is currently working toward his PhD with Prof. Ofer Zeitouni. His current research deals with the study of the asymptotics of extreme values and with the extremal processes of discrete Gaussian fields that appear in mechanical statistics and spin glass theory as the size of the system grows.

ADAMS Fellows 2013-2014



Ariel Afek

PhD student of Dr. David Lukatsky, Department of Chemistry, Ben-Gurion University of the Negev Dissertation topic: Design Principles and Consequences of Nonconsensus Protein-DNA Binding



Yoav Bauman

PhD student of Prof. Ofer Mandelboim, Lautenberg Center for General and Tumor Immunology, the Hebrew University of Jerusalem Dissertation topic: Pathogen Recognition by Natural Killer Cells



Ronen Dar

PhD student of Prof. Meir Feder and Prof. Mark Shtaif, School of Electrical Engineering, Tel-Aviv University Dissertation topic: Information Theory in Optical-Fiber Communictations



Anna Frishman

PhD student of Prof. Gregory Falkovich, Department of Physics of Complex Systems, Weizmann Institute of Science Dissertation topic: A Search for Statistical Laws in Turbulent Systems



Livnat Jerby Arnon

PhD student of Prof. Eytan Ruppin, School of Computer Science, Tel-Aviv University

Dissertation topic: Genome-scale Modelling of Cancer Genetics and Metabolism Towards the Identification of Selective Anticancer Treatments



Assaf Manor

PhD student of Dr. Carmel Rotschild, Faculty of Mechanical Engineering, Technion-Israel Institute of Technology

Dissertation topic: Thermodynamic Light Management for 3rd Generation Photovoltaics





Sivan Refaely-Abramson

PhD student of Prof. Leeor Kronik, Department of Materials and Interfaces, Weizmann Institute of Science

Dissertation topic: A Generalization of the Optimally-tuned Range-separated Hybrid Scheme to the Solid-state



Liran Rotem

PhD student of Prof. Vitali-Milaman, School of Mathematical Sciences, Tel-Aviv University

Disseration topic: Asymptotic Geometric Analysis: Log-concavity, α -Concavity, Quasi-Concavity



Eitan Schechtman

PhD student of Prof. Hagai Bergman, The Interdisciplinary Center for Neural Computation (ICNC), the Hebrew University of Jerusalem

Dissertation topic: The Neural Correlates of Basal Ganglia Abnormalities in the Chronic Phencyclidine (PCP) Primate Model of Schizophrenia



Avishay Tal

PhD student of Prof. Ran Raz, Department of Computer Science and Applied Mathematics, Weizmann Institute of Science Dissertation topic: Analysis of Boolean Functions in Theoretical Computer Science



New Adams Fellows for 2013-2014 in the Academy's Science Garden in front of the Einstein Memorial, with (left to right) Batsheva Shor, Prof. Willner, Mr. Adams and (far right) Dr. Meir Zadok

ADAMS Fellows 2012-2013



Tslil Ast

PhD student of Dr. Maya Schuldiner, Department of Molecular Genetics, Weizmann Institute of Science

Dissertation topic: Uncovering the Translocation and Quality Control Mechanisms of Glycosylphosphatidylinositor (GPL) Anchored Proteins



Assaf Ben Moshe

PhD student of Prof. Gil Markovich, Department of Chemical Physics, Tel-Aviv University

Dissertation topic: Chiroptical Effects Induced in Metal and Semiconductor Nanoparticles



Miri Krupkin

PhD student of Prof. Ada Yonath, Department of Structural Biology, Weizmann Institute of Science

Dissertation topic: Towards the Determination of the Structure of Mycobacterium Smegmatis Ribosome and Studies on the Properties of the Prebiotic Ribosome



Nir Lazarovich

PhD student of Prof. Michah Sageev, Department of Mathematics, Technion-Israel Institute of Technology

Dissertation topic: Non-positively Curved Homogeneous Polygonal Complexes



Or Ordentlich

PhD student of Dr. Uri Erez, School of Electrical Engineering, Tel-Aviv University Dissertation topic: Robust Lattice Schemes for Multi-User Communication Networks



Liel Sapir

PhD student of Dr. Daniel Harries, Institute of Chemistry and The Fritz Haber Research Center, The Hebrew University of Jerusalem

Dissertation topic: Modeling Osmolyte-Induced Conformational Changes in Biomacromolecules

Adams Seminar 2014





David Tsivion

PhD student of Prof. Ernesto Joselevich, Department of Material and Interfaces, Weizmann Institute of Science Dissertation topic: Guided Growth of Horizontal Nanowires



Erez Zohar

PhD student of Prof. Benni Reznik, School of Physics and Astronomy, Tel-Aviv University

Dissertation topic: Quantum Simulations of Quantum Field Theories

SIXTH ADAMS CONFERENCE February 2014











(clockwise)

Prof. Amiram Grinvald, Adams Fellowship Committee Chair Prof. Ben-Zion Shilo, showing "Life's Blueprint: Principles of Embryo Design"

Prof. Ben-Ami Shillony, describing "Japanese Esthetics: Look on the Jar, not in its Contents"

Sophie Buhbut, explaining her poster to Prof. Daniel Weihs, who helped judge the competition

Prof. Daniel Weihs, lecturing on "Learning from Nature – An Engineer's Perspective"

Center – Ariel Afek, first prize recipient, explaining his poster to Prof. Grinvald and Adams Alumnus Dr. Guy Ron, who helped judge the poster competition



ADAMS Fellows 2011-2012



Dmitry Batenkov

PhD student of Prof. Yosef Yomdin, Department of Mathematics, Weizmann Institute of Science

Dissertation topic: Algebraic Reconstruction of Geometric Models from Integral Measurements



Avraham Braun

PhD student of Prof. Jeffrey Gordon, Department of Solar Energy and Environmental Physics, Ben-Gurion University of the Negev

Dissertation topic: The Physics of High Carrier Injection Rates in Concentrator Photovoltaics



Sophia Buhbut

PhD student of Prof. Arie Zaban, Institute of Chemistry, Bar-Ilan University Dissertation topic: FRET Mechanism Based on Nanomaterials in Dye-Sensitized Solar Cells: Synthesis, Characterization and Applications



Amir Erez

PhD student of Prof. Yigal Meir, Department of Physics, Ben-Gurion University of the Negev Dissertation topic: Superconductor to Insulator Transition in Thin Films



Daphna Nachmani

PhD student of Prof. Ofer Mandelboim, Lautenberg Center for General and Tumor Immunology, The Hebrew University of Jerusalem Dissertation topic: MicroRNAs in Immune-Regulation: Viral Mimicry of Host Mechanisms



Amir Nevet

PhD student of Prof. Meir Orenstein, Department of Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Two-Photon Processes in Micro and Nano Semiconductor Structures





Doron Puder

PhD student of Prof. Nati Linial, Einstein Institute of Mathematics, The Hebrew University of Jerusalem

Dissertation topic: The Combinatorial, Algebraic and Topological Aspects of Word Maps



Eran Small

PhD student of Prof. Yaron Silberberg, Department of Physics of Complex Systems, Weizmann Institute of Science

Dissertation topic: Statistical Properties of Light Propagating in Non-Linear Systems



Hadas Soifer

PhD student of Dr. Nirit Dudovich, Department of Physics of Complex Systems, Weizmann Institute of Science

Dissertation topic: Probing Electronic Wavefunctions via High Harmonic Generation



Amir Wand

PhD student of Prof. Sanford Ruhman, Department of Chemistry, The Hebrew University of Jerusalem

Dissertation topic: Investigation of the Photochemistry of Retinal Proteins and Model Systems Using Novel Techniques of Ultrafast Spectroscopy: Resolving the Dynamics as well as Structural Information of the Excited States





May 2014 Field Trip - at Ein Avdat

ADAMS Fellows 2010-2011



Avital Adler

PhD student of Prof. Hagai Bergman, Interdisciplinary Center for Neural Computation (ICNC), The Hebrew University of Jerusalem Dissertation topic: Value Encoding in the Striatum in View of Serotonin Neurotransmission



Leonid Barenboim

PhD student of Dr. Michael Elkin, Department of Computer Science, Ben-Gurion University of the Negev Dissertation topic: Efficient Network Utilization in Locality-Sensitive Distributed Algorithms



Arren Bar-Even

PhD student of Dr. Ron Milo, Department of Plant Sciences, Weizmann Institute of Science Dissertation topic: The Design, Analysis and Testing of Synthetic Carbon Fixation Cycles



Omer Bobrowski

PhD student of Prof. Robert J. Adler, Department of Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Some Topics in the Algebraic Topology of Random Fields



Ronit Bustin

PhD student of Prof. Shlomo Shamai, Department of Electrical Engineering, Technion-Israel Institute of Technology

Dissertation topic: The I-MMSE approach for Multi-Terminal Problems in the Gaussian Regime



Klim Efremenko

PhD student of Prof. Amnon Ta-Shma and Prof. Oded Regev, Department of Computer Science, Tel-Aviv University Dissertation topic: Algebraic Constructions in Computational Complexity

Adams Seminar 2014





Yoav Livneh

PhD student of Dr. Adi Mizrahi, Department of Neurobiology, The Hebrew University of Jerusalem

Dissertation topic: Adult Neurogenesis: From Synapse Formation, Through Sensory Coding to Animal Behavior



Itai Roffman

PhD student of Prof. Eviatar Nevo and Prof. Avraham Ronin, The International Graduate Center of Evolution, University of Haifa

Dissertation topic: Studying Suite of Homo Traits in Pan: Supporting Cultural and Genetic Evidence for their Inclusion in Homo Genus



Yoav Oved Rosenberg

PhD student of Prof. Jiwchar Ganor, Department of Geological and Environmental Sciences, Ben-Gurion University of the Negev Dissertation topic: The Fate of Radium in Evaporitic Systems



Osip Schwartz

PhD student of Dr. Dan Oron, Department of Physics of Complex Systems, Weizmann Institute of Science Dissertation topic: Nonlinear Microscopy with Nanoparticles



Adi Sheinfeld

PhD student of Prof. Avishay Eyal, Electrical Engineering, Tel-Aviv University Dissertation topic: Optical Detection of Alzheimer's Disease Via Ocular Spectroscopy



Avital Swisa

PhD student of Dr. Yuval Dor, Department of Developmental Biology and Cancer Research, The Faculty of Medicine, The Hebrew University of Jerusalem Dissertation topic: Role of LKB1 in Pancreatic Beta Cell Dynamics

ADAMS Fellows 2009-2010



Monther Abu-Remaileh

PhD student of Prof.Yehudit Bergman, Human Genetics, The Hebrew University of Jerusalem

Dissertation topic: Understanding the Molecular Mechanism of Oct-3/4 Oncogenicity



Danny Ben-Zvi

PhD student of Prof. Naama Barkai and Prof. Ben-Zion Shilo, Molecular Genetics, Weizmann Institute of Science Dissertation topic: Scaling and Robustness in Embryonic Development



Oded Berger-Tal

PhD student of Prof. David Saltz, Desert Ecology, Ben-Gurion University of the Negev Dissertation topic: Movement Ecology of Persian Fallow Deer



Ronen Gabizon

PhD student of Dr. Assaf Friedler, Institute of Chemistry, The Hebrew University of Jerusalem Dissertation topic: Activating Proteins by Shifting their Oligomerization Equilibrium: A New Approach to Drug Design



Alex Hayat

PhD student of Prof. Meir Orenstein, Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Applications of Multi-Photon Processes for Semiconductor for Ouantum Photonics.



Efrat Mashiach

PhD student of Prof. Haim Wolfson and Prof. Ruth Nussinov in Computer Science, Tel-Aviv University

Dissertation topic: Structural Bioinformatics: Flexible Molecular Docking





Or Meir

Phd student of Prof. Oded Goldreich, Theoretical Computer Science, Weizmann Institute of Science

Dissertation topic: Combinatorial Construction of Probabilistic Proof Systems



Moshe Mishali

PhD student of Prof. Yonina Eldar, Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Compressive Processing of Analog Signals



Uri Roll

PhD student of Lewi Stone in Zoology, Tel-Aviv University Dissertation topic: Spatial Perspectives of Epidemiological and Ecological Problems



Sivan Sabato

PhD student of Prof. Naftali Tishby, School of Computer Science and Engineering, The Hebrew University of Jerusalem. Dissertation topic: Supervised Learning with Partial Information



Efrat Shema

PhD student of Prof. Moshe Oren, Molecular Cell Biology, Weizmann Institute of Science Dissertation topic: RNF20 as a Novel Tumor Suppressor: Exploring its Roles in Transcriptional Regulation, Formation and Progression of Cancer, Senescence and Development



July 2013 Alumni meeting with Mr. Adams, his granddaughter Lia Troy and son-in-law Prof. Gil Troy, in the Academy Library

ADAMS Fellows 2008-2009



Keren Censor

PhD student of Prof. Hagit Attiya, Computer Science, Technion-Israel Institute of Technology Dissertation topic: Probabilistic Methods in Distributed Computing



Emanuele Dalla Torre

PhD Student of Dr. Ehud Altman, Condensed Matter Physics, Weizmann Institute of Science Dissertation topic: Strongly Correlated States in Ultra-cold Atoms



Noam Gross

PhD Student of Dr. Lev Khaykovich, Physics, Bar-Ilan University Dissertation topic: Nonlinear Dynamics and Interactions of Bright Matter-wave Solitons in a Bose-Einstein Condensate.



Ishay Haviv

PhD Student of Prof. Oded Regev, Computer Science, Tel-Aviv University Dissertation topic: Combinatorics and Theoretical Aspects of Computer Sciences; Complexity of Lattice Problems



Amir Ingber

PhD Student of Prof. Meir Feder, Electrical Engineering, Tel-Aviv University Dissertation topic: Coding Methods and Bounds for the Bandwidth Limited Regime



Mor Mordechai Peretz

PhD Student of Prof. Shmuel Ben-Yaakov, Electrical Engineering & Computer Science, Ben-Gurion University of the Negev Dissertation topic: Time Domain Design of Digital Controllers for PWM Converters

Adams Seminar 2014





Michael Orlov

PhD Student of Prof. Moshe Sipper, Computer Science, Ben-Gurion University of the Negev Dissertation topic: Evolutionary Computation



Eran Segev

PhD Student of Dr. Eyal Buks, Electrical Engineering, Technion-Israel Institute of Technology Dissertation topic: Back-Reaction Cooling and Quantum Phenomena in Nanomechanical Resonators



Gil Segev

PhD Student of Prof. Moni Naor, Computer Science, Weizmann Institute of Science Dissertation topic: The Complexity of Resilient Sketches



Reut Shema

PhD Student of Prof. Yadin Dudai, Neurobiology, Weizmann Institute of Science Dissertation topic: The Role of PKMzeta in Long Term Memory Storage in the Rat Brain



May 2014 Field Trip - group photo at Sde Boker

ADAMS Fellows 2007-2008



Avraham Ben-Aroya

PhD student of Dr. Oded Regev and Dr. Amnon Ta-Shma, Computer Science, Tel-Aviv University

Dissertation topic: Quantum Computation and Quantum Information



Shai Carmi

PhD student of Professor Shlomo Havlin, Physics, Bar-Ilan University Dissertation topic: Complex Networks: Theory and Applications



Chen Davidovich

PhD student of Professor Ada Yonath, Structural Biology, Weizmann Institute of Science Dissertation topic: Ribosome Structure and Function



Shahar Dobzinski

PhD student of Professor Noam Nisan, Computer Science, The Hebrew University of Jerusalem Dissertation topic: The Power of Approximations in Mechanism Design



Moshe Goldstein

PhD student of Professor Richard Berkovits, Physics, Bar-Ilan University Dissertation topic: Interference Effects in Interacting Mesoscopic Systems



Amir Goren

PhD student of Professor Gil Ast, Human Genetics and Molecular Medicine, Tel-Aviv University Dissertation topic: Inferring Regulatory Elements of Splicing Using Comparative Genomics

Adams Seminar 2014





Dan Hermelin

PhD student of Professor Gad M. Landau, Computer Science, University of Haifa Dissertation topic: Algorithmic Challenges in RNA Comparative Analysis



Yoav Lahini

PhD student of Professor Yaron Silberberg, Physics, Weizmann Institute of Science Dissertation topic: Disordered Nonlinear Systems



Guy Ron

PhD student of Professor Eliezer Piasetzky, Experimental Physics, Tel-Aviv University Dissertation topic: Measurement of the Proton Elastic Form Factors at Low Q2



Avraham Saig

PhD student of Professor Ehud Ahissar and Dr. Amos Arieli, Neurobiology, Weizmann Institute of Science Dissertation topic: Guiding Principles for Sensory Substitution: From Vision to Touch



Alexander Sodin

PhD student of Professor Vitali Milman, Mathematics, Tel-Aviv University Dissertation topic: Probabilistic Methods in Asymptotic Geometric Analysis



May 2014 Field Trip - having fun at the Carasso Science Park in Beer Sheba

ADAMS Fellows 2006-2007



Haim Beidenkopf

PhD student of Professor Eli Zeldov, Physics, Weizmann Institute of Science Dissertation topic: Vortex Thermodynamics in High-Temperature Superconductors



Liat Benmoyal Segal

PhD student of Professor Hermona Soreq, Biological Chemistry, and Professor Hagai Bergman, Physiology, The Hebrew University of Jerusalem

Dissertation topic: The Role of the Cholinergic System in the Pathogenesis of Parkinson's Disease



Yael Elbaz

PhD student of Prof. Shimon Schuldiner, Biological Chemistry, The Hebrew University of Jerusalem Dissertation topic: Structure-Function Study of Multidrug Transporters



Olga Khersonsky

PhD student of Dr. Dan Tawfik, Chemistry, Weizmann Institute Dissertation topic: Mechanistic Enzymology: From Classical Tools to Directed Evolution



Dana Moshkovitz

PhD student of Prof. Ran Raz, Mathematics, Weizmann Institute Dissertation topic: Probabilistically Checkable Proofs



Ariel Procaccia

PhD student of Professor Jeffrey S. Rosenschein, Computer Science, The Hebrew University of Jerusalem Dissertation topic: The Theoretical Foundation of Multi-agent Systems (MAS)





Carmel Rotschild

PhD student of Professor Moti Segev, Physics, Technion-Israel Institute of Technology Dissertation topic: Soliton Interactions in Nonlocal Nonlinear Media



Ofer Shayevitz

PhD student of Professor Meir Feder, Electrical Engineering, Tel-Aviv University Dissertation topic: Universal Communications with Feedback



Amir Shlomai

PhD student of Prof. Yosef Shaul, Biochemistry, Weizmann Institute Dissertation topic: Metabolic Alterations in the Liver and Hepatitis B Virus Gene Expression



Noam Stern

PhD student of Professor Ofer Mandelboim, Immunology, The Hebrew University of Jerusalem Dissertation topic: Natural Killer (NK) Cells



May 2014 Field Trip - Visiing Ben-Gurion's Hut



ADAMS Fellows 2005-2006



Yael Eshed-Eisenbach

PhD student of Prof. Elior Peles, Molecular Cell Biology, Weizmann Institute of Science Dissertation topic: Neuro-Glial Interactions



Nathan Keller

PhD student of Prof. Gil Kalai, Mathematics, The Hebrew University of Jerusalem Dissertation topic: Probabilistic Combinatorics and its Relations with Harmonic Analysis



Tal Lev-Ami

PhD student of Prof. Shmuel Sagiv, Computer Science, Tel-Aviv University Dissertation topic: Efficient Transformers for the Verification of Heap Manipulating Programs



Raz Palty

PhD student of Dr. Israel Sekler, Physiology, Ben-Gurion University of the Negev Dissertation topic: Characterization of the Novel Exchanger NCLX – a FLJ2233 Gene Product



Sharon Shwartz

PhD student of Professor Moti Segev, Physics, Technion-Israel Institute of Technology Dissertation topic: Nonlinear Optics in CZT:V





May 2014 Field Trip - more fun at the Carasso Science Park