

ADAMS
Fellowships מלגות אדמס

האקדמיה הלאומית הישראלית למדעים
The Israel Academy of Sciences and Humanities



ADAMS SEMINAR 2016

סמינר אדמס תשע"ו



Adams Seminar 2016

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Guest Lecturer

Professor Ruth Arnon

Academy Member and Immediate Past President
Israel Prize Laureate in Medicine
Weizmann Institute of Science



Prof. Ruth Arnon

Academy Member and Israel Prize Laureate in Medicine
The Weizmann Institute of Science

Prof. Ruth Arnon earned both her MSc (1955) and her PhD at the Hebrew University of Jerusalem (1960) prior to joining the Weizmann Institute in 1960.

She is the incumbent of the Paul Ehrlich Chair in Immunochemistry and has held a number of senior posts at the Institute, including Head of the Department of Chemical Immunology (1973-74 and 1975-78), Dean of Biology (1985-88), and Vice President (1988-97). From 1985 to 1994 she was the Director of the Institute's MacArthur Center for Molecular Biology of Tropical Diseases.

Prof. Arnon has made significant contributions to the fields of vaccine development and cancer research, and to the study of parasitic diseases. She co-developed Copaxone®, a multiple sclerosis (MS) drug currently marketed worldwide. She continues to focus on the understanding of the mechanism by which Copaxone is exerting its beneficial effect. She is also developing a synthetic vaccine to provide broad range immunity against infection with influenza viruses.

Between 2010-2015, Prof. Arnon served as President of the Israel Academy of Sciences and Humanities. She is an elected member of the European Molecular Biology Organization (EMBO) and of the American Philosophical Society; in the past she served as President of the European Federation of Immunological Societies (EFIS); Secretary-General of the International Union of Immunological Societies (IUIS) and President of the Association of Academies of Sciences in Asia (AASA). She was a member of the European Union Research Advisory Board (EURAB).

Prof. Arnon's awards and honors include the Robert Koch Prize in Medical Sciences (1979, Germany), the Jimenez Diaz Memorial Award (1986, Spain), Legion of Honor (1994, France), the Hadassah World Organization's Women of Distinction Award (1997), the Wolf Prize (1998), the Rothschild Prize (1998), the Israel Prize (2001), the Aesku Prize for Life Contribution to Autoimmunity (2008), "Yakir Tel-Hai" from the Tel-Hai Academic College (2008), and the Dr. Tovi Comet-Walerstein C.A.I.R Institute Science Award from Bar-Ilan (2015). In addition, she has received Honorary Doctorates from several universities in Israel and Europe, among them Ben-Gurion University of the Negev (2007), Tel Aviv University (2011), the Open University in Israel (2014), and Leuphana University in Germany (2014).

Prof. Arnon and her husband, Uriel, have two children and six grandchildren.



Introductory remarks by

Professor Nili Cohen

President of the Israel Academy

I am very pleased to greet our new Adams Fellows for 2016–2017 here at the Israel Academy of Sciences and Humanities. Since the inauguration of the Adams Fellowship Program in May of 2005, 103 Adams Fellows, PhD Students of the highest academic standing, have been inducted. Many of them are now holding research and teaching positions in major universities and scientific centers. We are happy to introduce this year's eight new fellows briefly in this brochure.

Within the framework of the Adams Fellowship Program, Adams Fellows enjoy sustained financial support for three to four uninterrupted years of doctoral study. 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 international scientific conferences/workshops, 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 and conferences, science communication workshops and field trips. We are confident that the Adams Fellowships provide a meaningful contribution to the training of excellent scientists in Israel.

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 was privileged to meet Marcel Adams and his dear departed wife Annie while I was rector of Tel-Aviv University and marveled at their vision and commitment to the advancement of science. It's a great pleasure for me to celebrate Marcel's 96th birthday at the Academy! I was happy to meet his family at the Israel Academy recently, and was impressed by their continuous devotion to the promotion of science. We are deeply grateful to Adams family and feel honored by their outstanding support.

ADAMS Fellowship Steering & Approval Committee



Professor Moti Segev,
Chairman



Professor Moty Heiblum



Professor Shmaryahu Hoz



Professor David Kahzdan



Professor Moshe Oren



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Professor Yakir Aharonov

Professor Noga Alon

Professor Moshe Moshe

Professor Abraham Nitzan

Professor Yosef Shiloh

Professor Yigal Talmi

Professor Jacob Ziv



Professor Mordechai (Moti) Segev

Chair of the Adams Fellowships Committee

Dear Friends,

Warm greetings to all the current Adams Fellows, Adams Alumni, Adams Committee, Members of the Israel Academy of Sciences and Humanities, to its President Prof. Nili Cohen, and most of all to the generous Adams Family

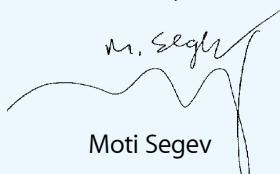
The Adams Fellowship Program attempts to select our very best PhD students, with the clear goal of nurturing the next generation of leading researchers in Israel. Israel is blessed with excellent young researchers, who tend to be more mature and knowledgeable than PhD students in other countries, partly due to the army service, and partly because the respect for knowledge and encouraging curiosity are part of our culture. Very often, our PhD students are also highly motivated, and they tend to have the drive to go after original problems. All of these place them in high demand for postdoc positions at the best institutions, which later on gives them an excellent starting point to become world-leading researchers.

I would like to thank a special person who has shown exceptional leadership and generosity: Professor Ruth Arnon, the former President of the Israel Academy of Sciences and Humanities. Professor Ruth Arnon, is widely known as the “Mother of Copaxone”: the medication she invented for treating multiple sclerosis, which has made her world-famous. Ruthie has just retired from being the President of our Academy, and – upon her retirement – she donated a special fellowship to support excellent women researchers, alumni of the Adams Program, to help sponsor their postdoctoral period abroad. We thank you wholeheartedly, Ruthie, for this fellowship, for many years of leadership and for honoring us with your lecture for this seminar.

Foremost, I would like to thank Mr. Marcel Adams for his vision and leadership in establishing the Adams Fellowship Program, freeing our best young scientists from financial worries to concentrate their energies on their research. It’s wonderful that his children, Linda and Sylvan are following in his footsteps.

I wish you all success in your research, and hope that this tradition will continue for years to come.

Sincerely,



Moti Segev

ADAMS Seminar 2015



(Top and clockwise)

Linda Adams and her brother Sylvan showing the mementos they received from the Academy

Linda Adams greeting new fellows

Professor Howard Cedar, Guest Lecturer, on "Annotating the Genome"

Professor Gil Troy, Linda's husband, talking with Michael Kalyuzhny, a new Adams Fellow

Izchak Goldshtein receiving his certificate

Professor Amiram Grinvald chairing the Seminar

Michal Natan receiving her certificate from Professor Ruth Arnon



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. Marcel Adams is a Montreal resident, the proud father of four and grandfather of eleven. He remains full of energy and looks at least a decade younger than his 96 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 Ph.D. students, covering their full tuition and living expenses throughout four years of study and including funds for attending scientific conferences and workshops 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 Twelfth Cycle of the Adams Fellowship Program.



Angelica Elkan

PhD student of Prof. Boris Rybtchinski, Department of Organic Chemistry, Weizmann Institute of Science

Dissertation topic: Hybrid Materials Based on Organic Nanocrystals and Carbon Nanotubes (CNTs)

Born in Tashkent, Uzbekistan, Angelica Elkan immigrated to Israel with her family at the age of five. She grew up in a rural town near Jerusalem and attended Boyer High School. Since she was fascinated by chemistry from the time she was very young, no one was surprised when she chose the subject for her academic studies— or when she won the Rector's or Dean's prize for outstanding undergraduate students at Bar-Ilan University every single year of her BSc studies.

After graduating *summa cum laude*, Angelica went to the Hebrew University for her MSc, joining the lab of Prof. Itamar Willner. Her research there, centered on bio-sensing and bio-electronics, included the development of an optical sensor for cysteine/cystine in urine, and a hybrid anode composed of semiconducting nanoparticles and catalytic DNA, fueled solely by glucose. Since she began her MSc, Angelica has contributed to eight papers published in international journals and was the first author of two of them.

Angelica is currently pursuing her PhD under the supervision of Prof. Boris Rybtchinski at the Weizmann Institute of Science. Her research focuses on creating novel hybrid materials based on organic nanocrystals and carbon materials (nanotubes, graphene, etc.), targeting novel opto-electronic and alternative energy systems.



Hezi Grisaro

PhD student of Prof. Avraham N. Dancygier, Faculty of Civil and Environmental Engineering, Technion – Israel Institute of Technology

Dissertation topic: Response of a Structural Element to Combined Loading of Explosion and Fragmentation Impact

Born and raised in Haifa, Hezi Grisaro attended the Ironi Alef High School, where his interest in science began. Upon graduation, he decided to join the ATUDA (the army's academic reserve) program, which enabled him to receive his BSc in civil engineering (structural engineering), graduating *summa cum laude* from the Technion at the age of 22.

Hezi did his military service in the construction division of the IDF and the Ministry of Defense, completing the professional officer's course of the IDF and working on construction projects in conjunction with the Army Engineering Corps. His expertise includes the analysis of military structures' protective resistance to explosions and the impact of missiles. During the course of his army service, Hezi was awarded his MSc in civil engineering, *summa cum laude*, from the Technion. His MSc thesis, "The Effect of a Rear Face Layer on Scabbing in Walls of RC Protective Structures," was suggested by the Army Corps of Engineers, which encouraged him to deal with real engineering issues facing the army. His research, which has appeared in scientific journals and at international conferences, has proven very important for the design of new protective structures and for strengthening existing structures against various threats.

After six years in the army, Hezi left military service and started his PhD studies, investigating the response of structural elements to combined loading of explosion and fragmentation impact. Such combined loading has rarely been studied and is of great significance in the field of 'protective structures,' with particular relevance for the Army Engineering Corps. The IDF closely follows the progress of Hezi's research in order to use it for practical design instruction of protective structures that are subject to explosion and fragmentation impact.

While carrying out his PhD research, Hezi serves as a teaching assistant in the Technion's Civil and Environmental Engineering Faculty; he does his army reserve duty as a structural engineer in the Army Engineering Corps.



Yael Korem

PhD student of Prof. Uri Alon, Department of Molecular Cell Biology, Weizmann Institute of Science
Dissertation topic: Optimal Division of Labor in Cells and Tissues

Yael, a resident of Bet Lehem Ha'glilit in northern Israel sought simple, elegant mathematical tools in high school to describe and understand complex systems. This led her to the Hebrew University of Jerusalem, where she completed her BSc in physics in the Amirim interdisciplinary honors program for outstanding students. Realizing that the advent of new technologies calls for quantitative approaches to the most fascinating, fundamental questions, her MSc studies in mathematics and computer science at the Weizmann Institute of Science focused on bioinformatics. With her advisor, Prof. Uri Alon, she offered a framework for understanding high dimensional single-cell gene expression data by applying a theory of multi-objective systems, and demonstrated how this framework can be useful in analyzing data from various organisms and tissues. She presented her work at an international conference and published in *Plos Computational Biology*; the paper was later selected as the editor's choice in *Science* magazine. In cooperation with Dr. Oded Rechavi's lab at Tel Aviv University, Yael modeled the epigenetic inheritance mechanism of *C. Elegance*; this study appeared in *Cell*.

Today, she continues her PhD studies in Prof. Alon's lab, seeking general design principles in biology. She is working on modeling various strategies for task allocation between cells in a tissue, seeking to discover the guiding principles behind strategy selection. In addition, she is using dynamic systems tools to model resource allocation for cellular tasks in *E. coli*.

Hoping to make science more accessible to the public, Yael served as a guide at the Bloomfield Science Museum in Jerusalem and volunteered in a school in Lod. She currently teaches bioinformatics and writes articles on popular science for the Weizmann Institute educational website, *Davidson On-line*.



Gali Noti

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

Dissertation topic: Behavioral Algorithmic Game Theory

A native daughter of Yuvalim, a village in the lower Galilee, Gali Noti's undergraduate work in computer science and cognitive sciences at the Hebrew University focused on people's decision-making processes. She was inspired by the classic studies in the field, led by Tversky and Kahneman, who demonstrated how mathematical, rational models fail to explain human decision making. Realizing that their ideas had not yet entered the discourse in computer science, and that analyses in core real-world applications were still based on unrealistic behavioral assumptions, Gali decided that the subject called for further investigation.

She continued to a MSc in computer science at the Hebrew University's Center for the Study of Rationality, where her cross-disciplinary approach was encouraged. Under the supervision of Prof. Noam Nisan (CS) and Prof. Ilan Yaniv (Department of Psychology), she demonstrated the importance of addressing behavioral features in algorithmic environments, and specifically that in the context of Internet ad-auctions, the gap between theoretical and actual behavior might be worth billions of dollars!

In her PhD studies, Gali aims to bridge the gap between the theory and the actual human play in computerized systems in order to design effective algorithms that will achieve their desired outcomes in interactions with humans. She applies insights from psychology and behavioral economics in the framework of algorithmic game theory, machine learning and data science. Gali is also involved in an applied research project at Microsoft Research, where she is developing an algorithmic framework to sell cloud resources, based on principles of economics.

Gali's goal is that her scientific work will contribute to the understanding of the algorithmic systems that underlie the interactions of real people. This, she believes, will promote interdisciplinary approaches in computer science and lead to further research that emphasizes the links between computers, people and society.



Avia Raviv Moshe

PhD student of Prof. Yaron Oz, School of Physics and Astronomy, Faculty of Exact Sciences, Tel-Aviv University

Dissertation topic: Lifshitz Quantum Field Theories, Gravity and Hydrodynamics

Avia Raviv Moshe was born in Lod and moved at a young age to Rosh-Ha'ayin. Drawn to physics as a child, she attended The Aleh High School of Exact Sciences in Lod, majoring in physics, chemistry and math. After a voluntary stint in the civil service, tutoring at-risk children from dysfunctional families, she began studying physics at Tel-Aviv University.

Upon finishing her BSc in physics *magna cum laude*, Avia went on to earn an MSc in theoretical high energy physics, graduating *summa cum laude*. Her thesis, produced under the supervision of Prof. Yaron Oz, focused on the subject of non-relativistic, supersymmetric models. It was published in the *International Journal of High Energy Physics*.

Currently a PhD student at Tel-Aviv University in the field of theoretical high energy particle physics, Avia studies non-relativistic quantum field theories and the applications of Lifshitz scaling to gravity, to quantum field theories in the hydrodynamic regime and to supersymmetry. This field addresses long-standing questions in hydrodynamics and condensed matter physics, such as the study of turbulence, high temperature superconductivity, and quantum critical points. Her work ranges from dealing with abstract gravitational concepts through analytic calculations both in gravity and quantum field theory, to numerical programming. Seeking a new way to relate particle physics to condensed matter physics, Avia's work may reveal new properties of the laws of nature.



Asael Roichman

PhD student of Prof. Haim Cohen, Faculty of Life Sciences, Bar-Ilan University

Dissertation topic: Sirtuins in Aging and Metabolism

Asael Roichman was born in Jerusalem and later moved to the village of Kochav-Hashachar. Science was his hobby from an early age, and he studied biology as a major in high school. After a period of yeshiva studies and then military service in the prestigious 13th battalion of the Golani brigade, he began his undergraduate studies in life sciences at Bar-Ilan University and planned to continue with research in the field.

Walking off with the Rector's Prize for Outstanding Students every year, Asael graduated from Bar-Ilan *summa cum laude*. He launched his Master's degree while still in the third year of his BSc, working in Prof. Haim Cohen's Molecular Mechanism of Aging lab through the direct MSc program for the best undergraduates in science. He finished his MSc *magna cum laude*, went on to do his doctoral research in Haim Cohen's lab, and was awarded a graduate fellowship for outstanding students in the first year of his PhD studies.

Under the supervision of Prof. Cohen, Asael is investigating lifespan and metabolism, specifically how these are affected by the family of proteins called *sirtuins*. Using the SIRT6-tg mouse model in one of his projects, he found that over-expression of the protein SIRT6 protects against various age-related disorders such as glucose intolerance, adipose inflammation, and the loss of active behaviors. Asael contributed to a study published in *Cell Reports*, showing the mechanisms that allow SIRT6 to provide protection against the physiological damage of obesity. Asael's goal is to further understand how the sirtuins exert their beneficial effects on healthspan and lifespan. To answer his questions, he is making use of new mouse models that he's developed.

In addition to his research, Asael heads the exercise groups and is a teaching assistant in the undergraduate course, Biochemistry B.



Alexander Shleyfman

PhD student of Prof. Carmel Domshlak, Industrial Engineering and Management, Technion

Dissertation topic: Symmetry Breaking and Operator Pruning in Classical Planning and Beyond

Alexander Shleyfman was born in Ukraine (the former Soviet Union) and came to Israel as a child with the rest of his family. Despite the difficulties of studying in a new country in a foreign language, Alex discovered early on that he was attracted to the language of mathematics. During his school days, he took part in math tournaments both locally and abroad, garnering a bronze medal and honorable mention at the International Tournament of Towns in Mathematics, and honorable mention at the Israeli School Tournament in Mathematics. His passion for math led Alex to higher studies in the field at the Technion. However, he always perceived mathematics more as a tool than as an ultimate destination. Hence, while completing his BSc degree, he delved into topology and functional analysis, and upon its completion he started seeking a better way to apply the tools he had acquired. Artificial Intelligence (AI) gave him the context he sought, and he earned his Master's degree (*summa cum laude*) in it at the Faculty of Industrial Engineering and Management at the Technion. Still at the Technion, he is now pursuing the enigmas of AI in his PhD research under the supervision of Prof. Carmel Domshlak.



Amitai Yuval

PhD student of Prof. Jake Solomon, Department of Mathematics, The Hebrew University of Jerusalem

Dissertation topic: Geodesics of Positive Lagrangians in Almost Calabi-Yau Manifolds

Jerusalemite Amitai Yuval was attracted to the beauty of pure mathematics from a young age. While still in high school he started his BSc studies at the Hebrew University of Jerusalem, and graduated at the age of 20, after his military service. After the intensity of these years, he felt a need to explore other aspects of the human experience. He spent the next decade in the arts: playing and composing music, dancing, traveling and learning juggling and acrobatics.

At the age of 30 Amitai fell in love with mathematics once again and returned to the Hebrew University to begin his MSc. He joined Prof. Jake Solomon's group and started researching positive Lagrangians in Calabi-Yau manifolds. Working closely with his advisor, in his thesis he proved a number of theorems regarding the existence and uniqueness of the geodesics of positive matching cycles in Milnor fibers.

Now a PhD student under Prof. Solomon, Amitai aims to generalize his earlier findings in a more arbitrary setting. Very little is known about the existence and uniqueness of geodesics of general positive Lagrangians, and shedding light on it can play a significant role in the study of Calabi-Yau manifolds as well as the understanding of mirror symmetry. As the equation governing geodesics is hard to handle using traditional analytical methods, Amitai is focused on finding geometrical approaches to the problem.



Omri Azencot

PhD student of Prof. Mirela Ben-Chen, Computer Science Department, Technion–Israel Institute of Technology

Dissertation topic: Operator Representations in Geometry Processing



Izchak Baruch Goldshtein

PhD student of Prof. Moshe Lewenstein and Prof. Ely Porat, Department of Computer Science, Bar-Ilan University

Dissertation topic: Polynomial Lower Bounds on Algorithms and Data Structures



Barak Hirshberg

PhD student of Prof. Benny Gerber, The School of Chemistry, The Hebrew University of Jerusalem

Dissertation topic: Structure, Interactions and Dynamics of Many-Atom Systems



Michael Kalyuzhny

PhD student of Prof. Ronen Kadmon, Department of Ecology, Evolution and Behavior, The Hebrew University of Jerusalem and Prof. Nadav Shnerb, Department of Physics, Bar-Ilan University

Dissertation topic: A Theoretical and Empirical Analysis of Factors Affecting the Dynamics and Structure of Ecological Communities.



Michal Natan

PhD student of Prof. Ehud Banin and Prof. Shlomo Margel, Institute of Nanotechnology and Advanced Materials, Bar-Ilan University

Dissertation topic: Synthesis of Rechargeable N-halamine Nanoparticles and Determination of Their Antibacterial and Antibiofilm Activities



Eran Sagi

PhD student of Prof. Yuval Oreg, Department of Condensed Matter Physics, Weizmann Institute of Science

Dissertation topic: Strongly Interacting Topological Phases



Ido Sagi

PhD student of Prof. Nissim Benvenisty, Azrieli Center for Stem Cells and Genetic Research, The Hebrew University of Jerusalem
Dissertation topic: Genetic and Epigenetic Regulation in Human Pluripotent Stem Cells



Yinon Spinka

PhD student of Prof. Ron Peled, Pure Mathematics Department, Tel-Aviv University
Dissertation topic: Mathematical Models of Statistical Mechanics



New Adams Fellows for 2015-2016 in the Academy's Science Garden in front of the Einstein Memorial
(far left) Sylvan Adams, Margaret Adams, Barak Hirshberg, Izchak Goldshtein, Michael Kalyuzhny, Yinon Spinka, Omri Azencot, Eran Sagi, Ido Sagi, Linda Adams Troy, Prof. Gil Troy



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



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



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



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



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



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.



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



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



New Adams Fellow for 2015-2016 Michal Natan in the Academy's Science Garden in front of the Einstein Memorial

Left to right: Batsheva Shor, Linda Adams Troy, Prof. Ruth Arnon, Michal Natan and Prof. Gil Troy



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 Communications



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 Prof. 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

Dissertation 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

ADAMS CONFERENCE

January 2016



Prof. Nachum Ulanovsky on "Towards a Natural Neuroscience of Navigation in Bats"



Prof. Nirit Dudovich on "Ultrafast Photography"



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 Glycosylphosphatidylinositol (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 Prof. Uri Erez, School of Electrical Engineering, Tel-Aviv University

Dissertation topic: Robust Lattice Schemes for Multi-User Communication Networks



Liel Sapir

PhD student of Prof. 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



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

POSTER COMPETITION ANNUAL ADAMS CONFERENCE

January 2016



(Top right and clockwise)

Omri Azencot

Michael Kalyuzhny

Itai Roffman, winner of First Prize
(There were 2 first prizes)

Ariel Afek, winner of First Prize with Alumni
Dr. Sharon Schwartz and Dr. Amir Nevet

Ido Sagi, winner of Second Prize, with Prof. Nirit
Dudovich, Dr. Sharon Schwartz and Dr. Amir Nevet

Omri Ram with Prof. Moti Segev and Alumnus
Dr. Emanuele Dalla Torre (center)





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 Prof. 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

ADAMS CONFERENCE

January 2016



Prof. Ruth Gabizon on "Constitutional Entrenchment of Israel's Vision?"



Professors Gabizon, Cohen and Dudovich at the conference

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 Prof. 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 Prof. 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



Yoav Livneh

PhD student of Prof. 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 Prof. 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 Prof. 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



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 Prof. 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 Quantum 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 Prof. 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



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 Prof. 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



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 Prof. 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

ADAMS CONFERENCE

January 2016



Prof. Segev, Chair of the program



Adams Fellows and Alumni engrossed in a lecture

ADAMS Fellows 2007-2008



Avraham Ben-Aroya

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

Dissertation topic: Quantum Computation and Quantum Information



Shai Carmi

PhD student of Prof. Shlomo Havlin, Physics, Bar-Ilan University

Dissertation topic: Complex Networks: Theory and Applications



Chen Davidovich

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

Dissertation topic: Ribosome Structure and Function



Shahar Dobzinski

PhD student of Prof. Noam Nisan, Computer Science, The Hebrew University of Jerusalem

Dissertation topic: The Power of Approximations in Mechanism Design



Moshe Goldstein

PhD student of Prof. Richard Berkovits, Physics, Bar-Ilan University

Dissertation topic: Interference Effects in Interacting Mesoscopic Systems



Amir Goren

PhD student of Prof. Gil Ast, Human Genetics and Molecular Medicine, Tel-Aviv University

Dissertation topic: Inferring Regulatory Elements of Splicing Using Comparative Genomics



Dan Hermelin

PhD student of Prof. Gad M. Landau, Computer Science, University of Haifa

Dissertation topic: Algorithmic Challenges in RNA Comparative Analysis



Yoav Lahini

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

Dissertation topic: Disordered Nonlinear Systems



Guy Ron

PhD student of Prof. Eliezer Piasetzky, Experimental Physics, Tel-Aviv University

Dissertation topic: Measurement of the Proton Elastic Form Factors at Low Q²



Avraham Saig

PhD student of Prof. 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 Prof. Vitali Milman, Mathematics, Tel-Aviv University

Dissertation topic: Probabilistic Methods in Asymptotic Geometric Analysis



Haim Beidenkopf

PhD student of Prof. Eli Zeldov, Physics, Weizmann Institute of Science

Dissertation topic: Vortex Thermodynamics in High-Temperature Superconductors



Liat Benmoyal Segal

PhD student of Prof. 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 Prof. 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 Prof. 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 Prof. Moti Segev, Physics,
Technion-Israel Institute of Technology

Dissertation topic: Soliton Interactions in Nonlocal Nonlinear Media



Ofer Shayevitz

PhD student of Prof. 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 Prof. Ofer Mandelboim, Immunology, The Hebrew University of Jerusalem

Dissertation topic: Natural Killer (NK) Cells



Lunch at the Adams Seminar 2015

Left to right: Gil Troy, Margaret Adams, Sylvan Adams and Meir Zadok



Yael Eshed-Eisenbach

PhD student of Prof. Elinor 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 Schwartz

PhD student of Prof. Moti Segev, Physics, Technion-Israel Institute of Technology

Dissertation topic: Nonlinear Optics in CZT:V

