ADAMS
Fellowships מלגות אדמס

האקדמיה הלאומית הישראלית למדעים
The Israel Academy of Sciences and Humanities

ADAMS CONFERENCE 2018

כנס אדמס 2018

January 2018 ינואר

כנס אדמס

יום רביעי, ח' בשבט, תשע"ח

ADAMS CONFERENCE

Wednesday, January 24, 2018

	מושב בוקר	Morning Session
	כיבוד קל	
9:30-10:00		Refreshments in Lobby
	פרופ' נילי כהן, נשיאת האקדמיה - דברי פתיחה	
10:00-10:10		Prof. Nili Cohen, President of the Academy – Opening Remarks
	פרופ' מוטי שגב, חבר אקדמיה, יו"ר ועדת מלגות אדמס - הקדמה	
10:10-10:20		Prof. Mordechai (Moti) Segev, Academy Member, Chair of the Adams Committee – Introduction
	פרופ' יונינה אלדר, חברת אקדמיה, פרופסור להנדסת חשמל, הטכניון, על "שחזור מידע אבוד בעולם דיגיטלי"	
10:20-11:05		Prof. Yonina Eldar, Academy Member, Professor of Electrical Engineering, The Technion, on "Recovering Lost Information in the Digital World"
	שאלות ותשובות	
11:05-11:15		Questions and Answers
	פרופ' עודד אהרונסון, פרופסור למדעים פלנטריים (חקר החלל), מכון ויצמן למדע, על "משימות בין־פלנטריות והחיפוש אחר חיים ביקום"	
11:15-12:00		Prof. Oded Aharonson, Professor of Planetary Science, The Weizmann Institute of Science, on "Inter-Planetary Missions and the Search for Life in the Universe"
	שאלות ותשובות	
12:00-12:10		Questions and Answers
	ארוחת צהריים	
12:10-13:30		Lunch
	מושב אחה"צ	**Afternoon Session**
	תחרות פוסטרים	
13:30-15:00		Poster Competition
	פרופ' איגור שפירו, פרופסור לכימיה חישובית/תאורטית, האוניברסיטה העברית בירושלים, על "הבנת האירוע העיקרי בראיה: תובנות מהדמיות מחשב"	
15:00-15:45		Prof. Igor Schapiro, Professor of Theoretical and Computational Chemistry, The Hebrew University of Jerusalem, on "Understanding the Primary Event in Vision: Insights from Computer Simulations"
	שאלות ותשובות	
15:45-16:00		Questions and Answers
	פרופ' אלי פודה, פרופסור ללימודי האסלאם והמזרח התיכון, האוניברסיטה העברית בירושלים, על "המזרח התיכון בעידן של תמורות"	
16:00-16:45		Prof. Elie Podeh, Professor of Islamic and Middle Eastern Studies, The Hebrew University of Jerusalem, on "The Middle East: An Era of Changes"
	שאלות ותשובות	
16:45-17:00		Questions and Answers
	פרסים	
17:00		Prizes

Greetings from

Professor Mordechai (Moti) Segev

Academy Member, Chair of the Adams Fellowships Steering and Approval Committee

Warm greetings to all the current Adams fellows, Adams Alumni, Adams Committee, Members of the Israel Academy of Sciences and Humanities, to our 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. Our PhD students tend to be more mature, more motivated and knowledgeable than in other countries, partly due to the army service, and partly because the respect for knowledge and encouraging curiosity have been engraved in our culture for millennia. But being blessed with raw talent does not guarantee success in the world of research. This takes two more ingredients: creativity to come up with new original ideas, and courage to go after them – to boldly go where no one has gone before. I will therefore dedicate this welcome address to creativity and courage in the scientific world and here, in Israel.

Creativity and originality are manifested in the ability to think beyond the horizon. Not compromising on doing secondary work or follow-up research. Allow yourself to dream, assess the feasibility of your dreams in scientific eyes: how realizable they are, what would it take to pursue them, and whether (or not) the expected impact is worth the effort. To a large extent – thinking beyond the horizon is in our culture. It relates to the fact that we tend to be argumentative people. This is reflected in many biblical arguments even between our forefathers and God, ranging from Abraham's arguing with God about the destruction of Sdom, to Moses arguing with God in the golden calf story, and many more. And of course the famous Talmudic arguments and counter-arguments whose traditions last to this day. For at least two millennia, these arguments have enriched our thinking beyond the horizon. Nowadays this is reflected in the fact that a very large fraction of the Nobel Laureates in Physics, Chemistry and Economics were Jewish. So the "Jewish secret" on how to think about new creative ideas is to question and argue: argue with your fellow students, and most importantly – argue with your mentors. Do not accept anything for granted. Most often, scientific arguments lead to new discoveries.

Courage to pursue new ideas and the willingness to take risks are also part of our culture for longer than written history. In the past twenty years, this is manifested in the large number of start-up companies in Israel, and in the fact that our economy is blooming in spite of the large expenses on defense and security, which have no comparable case in the Western culture. Many times, carrying out innovative research involves going against the odds, taking the uncertain path, where you may very well fail. It takes courage to take such a risk. This is how science makes progress: by the handful who do take risk, standing out in front of the masses.

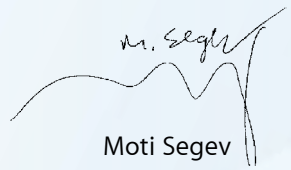
I'd like to add and say that science values creativity more than high grades, originality more than knowledge. Albert Einstein used to say: Imagination is more important than knowledge, for knowledge is limited to all we know and understand, while imagination embraces the entire world, and all there ever will be to know and understand.

In the same vein, many times visionary discoveries required fighting for. The best known example among us is of Danny Schechtman, who had to fight for his discovery of the quasicrystals for a decade. Danny had to fight pretty much against the whole science community, and his adversaries included Nobel Laureates. Danny's story is perhaps the most extreme one, but certainly not the only one: Many others among us had to go against the odds, and fight for their ideas. The lesson we learn from this is that if you are make an important discovery and the evidence is unequivocal, you should fight for it – by collecting more and more proofs, and encouraging others to follow. In the end, most likely the recognition will arrive.

With this, I'd like to wish you all success in your research, imagination to think creatively, good judgement to distinguish between a discovery and secondary work, courage to follow your heart, and persistence to make it happen.

We, the members of the committee that selected you, are hopeful that at least some of you will make huge discoveries, and become leaders of the next generation of researchers.

Best of luck to all of you.



Moti Segev

Prof. Yonina C. Eldar

Academy Member, Professor of Electrical Engineering, The Technion

Prof. Yonina C. Eldar received the B.Sc. degree in Physics in 1995 and the B.Sc. degree in Electrical Engineering in 1996 both from Tel-Aviv University (TAU), Tel-Aviv, Israel, and the Ph.D. degree in Electrical Engineering and Computer Science in 2002 from the Massachusetts Institute of Technology (MIT), Cambridge. From January 2002 to July 2002 she was a Postdoctoral Fellow at the Digital Signal Processing Group at MIT.

She is currently a Professor in the Department of Electrical Engineering at the Technion – Israel Institute of Technology, Haifa, Israel, where she holds the Edwards Chair in Engineering. She is also an Adjunct Professor at Duke University, a Research Affiliate with the Research Laboratory of Electronics at MIT and was a Visiting Professor at Stanford University, Stanford, CA. She is a member of the Israel Academy of Sciences and Humanities (elected 2017), an IEEE Fellow and a EURASIP Fellow.

Prof. Eldar has received numerous awards for excellence in research and teaching, including the IEEE Signal Processing Society Technical Achievement Award (2013), the IEEE/AESS Fred Nathanson Memorial Radar Award (2014), and the IEEE Kiyo Tomiyasu Award (2016). She was a Horev Fellow of the Leaders in Science and Technology program at the Technion and an Alon Fellow. She received the Michael Bruno Memorial Award from the Rothschild Foundation, the Weizmann Prize for Exact Sciences, the Wolf Foundation Krill Prize for Excellence in Scientific Research, and was selected as one of the 50 most influential women in Israel.

She was a member of the Young Israel Academy of Science and Humanities and the Israel Committee for Higher Education. She is the Editor in Chief of Foundations and Trends in Signal Processing, a member of the IEEE Sensor Array and Multichannel Technical Committee and serves on several other IEEE committees.

Prof. Eldar is author of the book "Sampling Theory: Beyond Bandlimited Systems" and co-author of the books "Compressed Sensing" and "Convex Optimization Methods in Signal Processing and Communications", all published by Cambridge University Press.

Prof. Oded Aharonson

Professor of Planetary Science, The Weizmann Institute of Science

Prof. Oded Aharonson was born in Tel Aviv, Israel. He earned a B.Sc. in Applied and Engineering Physics (1994) as well as a Master's degree (1995) from Cornell University, New York. He completed a Ph.D. in Earth, Atmospheric, and Planetary Science at MIT (2002). He served as a professor at the California Institute of Technology in Pasadena, California, U.S. from 2002 until he joined the Department of Earth and Planetary Sciences at the Weizmann Institute of Science in 2011, where he heads the Center for Planetary Science.

Prof. Aharonson studies planets, both within our solar system and beyond. He uses laboratory simulations – computer modeling combined with data from the latest space missions – to piece together planetary puzzles. He proposed a new paradigm for the formation of the Moon, one in which multiple impacts each generate a moonlet that together merge to form the present Moon.

He is a member of a number of space exploration projects, notably the Mars Exploration Rovers, the Lunar Reconnaissance Orbiter, and the Cassini mission to Saturn and its moon Titan. He is the Mission Scientist of SpaceIL, the Israeli team competing for the Google Lunar XPrize, a challenge calling for privately funded spaceflight teams to land a robotic spacecraft on the Moon. Prof. Aharonson leads the SpaceIL Science Team in exploring the enigmatic magnetism of the lunar rocks.

Prof. Aharonson's many professional and academic honors include the NASA Group Achievement Awards for the NEAR Shoemaker Mission Team, the MER Science Team, and the LRO Laser Ranging Team. He was also awarded an MIT Kerr Fellowship, AGU Outstanding Student Paper Award, Lewis Scholarship, and was elected to the Tau Beta Pi Honor Society. He is passionate about planetary research and very active in education and public outreach efforts that disseminate this research to children and the general public. For instance, he combined orbital measurements with computer modeling to test the theory that Mars has been hit by a Texas-sized asteroid about four billion years ago that forever changed the red planet. He has built laboratory simulations reproducing Mars-like surface conditions to measure and model ice and frost photographed by the robotic Mars spacecraft and rovers.

Prof. Igor Schapiro

Professor of Theoretical and Computational Chemistry, The Hebrew University of Jerusalem

Prof. Igor Schapiro was born in Kiev, Ukraine. His family moved to Germany in 1991 after the breakdown of the Soviet Union. He has studied Chemistry/Molecular Materials at the University of Duisburg-Essen, Germany where he obtained a B.Sc. degree. Igor obtained a Ph.D. in Theoretical/ Computational Chemistry at the same institution. At the postdoctoral stage, he worked at Bowling Green State University (OH) in the US, at the Max Planck Institute for Chemical Energy Conversion in Mülheim in Germany and at the Institute of Physics and Chemistry of Materials of Strasbourg in France.

In 2015, Prof. Schapiror joined the faculty of the Chemistry Institute at The Hebrew University of Jerusalem. His research is focused on application and development of computational tools to understand chemical reactions in biomolecules and organic molecules. On the application side the focus is on light-induced reactions, in particular in chromophore-protein complexes and solvated molecules. For this purpose he employs a hybrid quantum mechanics/molecular mechanics methodology which allows an accurate and efficient treatment of large molecular systems. On the development side he has interest in computational tools to support his research on photochemical/photobiological systems. He have several contributions to the quantum chemistry packages with emphasis on multiconfigurational wave function methods.

Prof. Schapiror has authored over 30 publications in scientific journals. He received several awards, among them the Starting Grant from the European Research Council (ERC).

Prof. Elie Podeh

Professor of Islamic and Middle Eastern Studies, The Hebrew University of Jerusalem

Prof. Elie Podeh is a Bamberger and Fuld Chair in the History of the Muslim Peoples at the Department of Islamic and Middle East Studies, the Hebrew University of Jerusalem, and a senior research fellow at the Harry S. Truman Institute for the Advancement of Peace. Since 2016 he serves as the President of the Middle East and Islamic Studies Association of Israel (MEISAI). He is also the Academic Chair of the Nehemia Levtzion Center for Islamic Studies at the Hebrew University, and Board Member of Mitvim – the Israeli Institute for Regional Foreign Policies.

Prof. Podeh completed his Ph.D. at Tel-Aviv University in Middle East studies (1991) and post-Doctorate at Cornell University in the USA (1992–93). His academic interest is the contemporary Middle East, and his particular fields of interests are Egypt; inter-Arab relations; the Arab-Israeli conflict; education and culture in the Middle East; Israeli foreign policy. He served as the Chair of Islamic and Middle East Department at the Hebrew University (2004–2009) and editor of *Hamizrah Hehadash* (New East, 2000–2008) – the Hebrew journal of MEISAI. He has published and edited twelve books and more than seventy academic articles in English, Hebrew and Arabic. His recent publications: *The Politics of National Celebrations in the Arab World* (Cambridge University Press, 2011); *Chances for Peace: Missed Opportunities in the Arab-Israeli Conflict* (Texas University Press, 2015); editor (with Onn Winckler), *The Third Wave: Protest and Rebellion in the Middle East* (Carmel, in Hebrew, 2017); and editor (with Samira Alayan), *Multiple Alterities: Views of Others in Textbooks of the Middle East* (Palgrave/Macmillan, forthcoming). At present, he works on a book, tentatively entitled: *The Mistress Syndrome – Israel's Clandestine Relations in the Middle East.*

Prof. Podeh is a frequent commentator on Middle Eastern affairs in the Israeli and foreign media, publishing periodic articles in *Haaretz and Jerusalem Post.*

Pictures of Adams Seminar,
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Design: Studio Schneider | Photographer: Michal Fattal