

**The Mortimer and Raymond Sackler
Institute of Advanced Studies**

**Annual Album
2016/2017**


**The Mortimer and Raymond Sackler
Institute of Advanced Studies**

 המכון ללימודים מתקדמים
ע"ש מורטימר וריימונד סאקלר

Professor Marek Karliner, Director

פרופסור מרק קרלינר, מנהל

September 3, 2017

MK – 3128

Sackler Family
One Stamford Forum
Stamford, Connecticut 06901-3431
U.S.A.

Dear Sackler Family,

2016/17 was a vigorous and stimulating academic year for the Mortimer and Raymond Sackler Institute of Advanced Studies. We had the pleasure of hosting 10 World-Renowned Professors; each of them was able to make a significant progress with joint projects that have been initiated earlier with TAU faculty or make new connections for new collaborations. Hence I am delighted to present you with an album that summarizes the outstanding activities our guests were involved with during their visits. We were honored to host exceptional scholars with us; each of them is a leader in their respective field:

Chi-Wang Shu	Division of Applied Mathematics, Brown University, Providence, USA
Victor Shrira	Department of Mathematics, Keele University, UK
François Englert	Nobel Prize Laureate in Physics, Professor Emeritus, Université libre de Bruxelles, Belgium
Miranda Schreurs	Chair, Environment and Climate Policy, Bavarian School of Public Policy, Technical University of Munich, Germany
David Weitz	Director of the Materials Research Science and Engineering Center, John A. Paulson School of Engineering and Applied Sciences, Harvard University, USA
Thomas Petes	Department of Molecular Genetics and Microbiology, Duke University School of Medicine, Durham, North Carolina, USA
Rudolf Podgornik	Department of physics, University of Ljubljana, Slovenia
Max Gassmann	Director of the Institute of Veterinary Physiology, University of Zurich, Switzerland
Henri Berestycki	Chair, Mathematical Analysis and Modelling L'Ecole des hautes études en sciences sociales, PSL Research University, Paris, France
Neil Immerman	College of Information and Computer Sciences, University of Massachusetts, USA

We would like to express our genuine gratitude to your generous support which is highly appreciated among TAU's researchers. Through it, our faculty members are able to strengthen their worldwide connections and create new teamwork projects with the most influential scholars and universities of our time.

Sincerely,

Prof. Marek Karliner

Director, Mortimer and Raymond Sackler Institute of Advanced Studies

cc: Research authorities
Ms. Ronit Nevo, Administrative Director, IAS
Encl.

THE MORTIMER AND RAYMOND SACKLER INSTITUTE OF ADVANCED STUDIES

Academic Year 2016 – 2017

Prof. CHI-WANG SHU November 2016

Prof. DAVID WEITZ December 2016

Prof. FRANÇOIS ENGLERT December 2016 - January 2017

Prof. VICTOR SHRIRA December 2016 - January 2017

Prof. MIRANDA SCHREURS December 2016 - March 2017

Prof. THOMAS PETES February - March 2017

Prof. RODULF PODGORNIK March - June 2017

Prof. MAX GASSMANN April 2017

Prof. HENRI BERESTYCKI May 2017

Prof. NEIL IMMERMANN May 2017

PROFESSOR CHI-WANG SHU



Prof. Chi-Wang Shu, Sackler Lecturer 2016/2017, obtained his B.S. degree from the University of Science and Technology of China in 1982 and his Ph.D. degree from the University of California at Los Angeles in 1986. He came to Brown University as an Assistant Professor in 1987, was promoted to Associate Professor in 1992 and Full Professor in 1996. He was the Chair of the Division of Applied Mathematics between 1999 and 2005, and currently is the Theodore B. Stowell University Professor of Applied Mathematics.

Prof. Shu's research interests include high order finite difference, finite element and spectral methods for solving hyperbolic and other convection dominated partial differential equations, with applications to areas such as computational fluid dynamics, semi-conductor device simulations and computational cosmology.

Prof. Shu served as the Managing Editor of Mathematics of Computation between 2002 and 2012, is now the Chief Editor of Journal of Scientific Computing and serves in the editorial boards of several other journals. His honors include the First Feng Kang Prize of Scientific Computing in 1995 and the SIAM/ACM Prize in Computational Science and Engineering in 2007. He is a SIAM Fellow and an AMS Fellow, and was an invited speaker at the International Congress of Mathematicians at Seoul in 2014.

פרופסור צ'י-וואנג שו

המחלקה למתמטיקה שימושית

אוניברסיטת בראון פרובידנס, רוד איילנד, ארה"ב

Professor Chi-Wang Shu

Division of Applied Mathematics, Brown University
Providence, Rhode Island, USA

קולוקוויום | Colloquium

HIGH ORDER NUMERICAL METHODS FOR CONVECTION DOMINATED PROBLEMS

Convection dominated partial differential equations are used extensively in applications including fluid dynamics, astrophysics, electro-magnetism, semi-conductor devices, and biological sciences. High order accurate numerical methods are efficient for solving such partial differential equations, however they are difficult to design because solutions may contain discontinuities and other singularities or sharp gradient regions. In this talk we will survey several types of high order numerical methods for such problems, including weighted essentially non-oscillatory (WENO) finite difference methods, WENO finite volume methods, discontinuous Galerkin finite element methods, and spectral methods. We will discuss essential ingredients, properties and relative advantages of each method, and comparisons among these methods. Recent development and applications of these methods will also be discussed.

The lecture will be held on Monday,
14 November 2016, at 12:15,
Room 006, Schreiber Building,
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום שני,
14 בנובמבר 2016, בשעה 12:15,
חדר 006, בניין שרייבר,
אוניברסיטת תל-אביב, רמת-אביב

סמינר | Seminar

DISCONTINUOUS GALERKIN METHOD FOR CONVECTION DOMINATED PARTIAL DIFFERENTIAL EQUATIONS

Discontinuous Galerkin (DG) method is a finite element method with features from high resolution finite difference and finite volume schemes such as approximate Riemann solvers and nonlinear limiters. It was originally designed for solving hyperbolic conservation laws but has been generalized later to solve higher order convection dominated partial differential equations (PDEs) such as convection diffusion equations and convection dispersion equations. The DG method has been widely applied, in areas such as computational fluid dynamics, computational electromagnetism, and semiconductor device simulations, just to name a few. In this talk we will give a general survey of the DG method, emphasizing its designing principles and main ingredients. We will also describe some of the recent developments in DG methods.

The lecture will be held on Tuesday,
15 November 2016, at 15:10,
Room 309, Schreiber Building,
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום שלישי,
15 בנובמבר 2016, בשעה 15:10,
חדר 309, בניין שרייבר,
אוניברסיטת תל-אביב, רמת-אביב

כיבוד קל יוגש לפני ההרצאות | Light refreshments will be served before the lectures



Prof. Chi-Wang Shu, Prof. Shalom Abarbanel and Dr. Adi Ditkowski



Prof. Chi-Wang Shu at one of his lectures



January 19, 2017

Professor Chi-Wang Shu visit – scientific report

Professor Chi-Wang Shu from Brown University was a Sackler Lecturer in The Mortimer and Raymond Sackler Institute of Advanced Studies between November 9 to November 19, 2016. This was a highly successful visit.

During this short period, Prof. Shu gave three lectures. The first two were the planned Sackler Lectures, titled "HIGH ORDER NUMERICAL METHODS FOR CONVECTION DOMINATED PROBLEMS" and "DISCONTINUOUS GALERKIN METHOD FOR CONVECTION DOMINATED PARTIAL DIFFERENTIAL EQUATIONS" which were given on November 14 and 15 respectively. To the request of the doctoral students, Prof. Shu agreed to give another talk titled "AN INTRODUCTION TO DISCONTINUOUS GALERKIN METHODS" in the student seminar in applied mathematics on November 17.

During this visit, Prof. Shu and I finalized and submitted a research grant to the US-Israel Binational Science Foundation titled "Block finite difference and their relations to finite elements methods", grant number 2016197.

A large part of Prof. Shu's visit was dedicated to research. Together we examined alternative formulations of Finite Elements methods and the possibility to incorporate the newly developed approach of Error Inhibiting Schemes into these formulations. Following these discussions, we laid a framework for collaborating research for the coming year.

Last, but not least Prof. Shu dedicated time to individually talk with four graduate students. In these meetings, Prof. Shu talked to them about their work and possible future research directions.

I would like to use this opportunity to thank the Mortimer and Raymond Sackler Institute of Advanced Studies and its donors for making this visit possible. Special thanks should be given to the administrative staff of the institute who made all the arrangement for this visit and made Prof. Shu's visit so successful.

Sincerely,

Dr. Adi Ditkowski

Department of applied mathematics.

PROFESSOR DAVID WEITZ



Prof. David A. Weitz, Sackler Lecturer 2016/2017, is Mallinckrodt Professor of Physics and Applied Physics at Harvard John A. Paulson School of Engineering and Applied Sciences; Director of the Materials Research Science and Engineering Center; Co-Director of the BASF Advanced Research Initiative; Associate Faculty Member at Wyss Institute for Biologically Inspired Engineering, and a Member at Kavli Institute for Bionano Science & Technology.

Prof. Weitz received his Ph.D. in physics from Harvard University and then joined Exxon Research and Engineering Company, where he worked for nearly 18 years. He then became a professor of physics at the University of Pennsylvania and moved to Harvard at the end of the last millennium as professor of physics and applied physics. He leads a large and active group studying soft matter science with a focus on materials science, biophysics and microfluidics. Several startup companies have come from his lab to use some of the technologies developed in his research.

פרופסור דייוויד וייץ

מנהל המרכז למדע חקר החומרים והנדסת החומרים
ביה"ס ע"ש ג'ון פולסון להנדסה ולמדעים שימושיים
אוניברסיטת הארוורד, ארה"ב

Professor David Weitz

Director of the Materials Research Science and Engineering Center
John A. Paulson School of Engineering and Applied Sciences
Harvard University, USA

קולוקוויום | Colloquium

UNIVERSAL CORRELATION BETWEEN STIFFNESS AND VOLUME FOR LIVING CELLS

The stiffness of cells is commonly assumed to depend on the stiffness of their surrounding: bone cells are much stiffer than neurons, and each exists in surrounding tissue that matches the cell stiffness. In this talk, I will discuss new measurements of cell stiffness, and show that that cell stiffness is strongly correlated to cell volume. This affects both the mechanics and the gene expression in the cell, and even impacts the differentiation of stem cells. Finally, I will also discuss new measurement techniques that probe the consequences of the cell stiffness on internal cell dynamics.

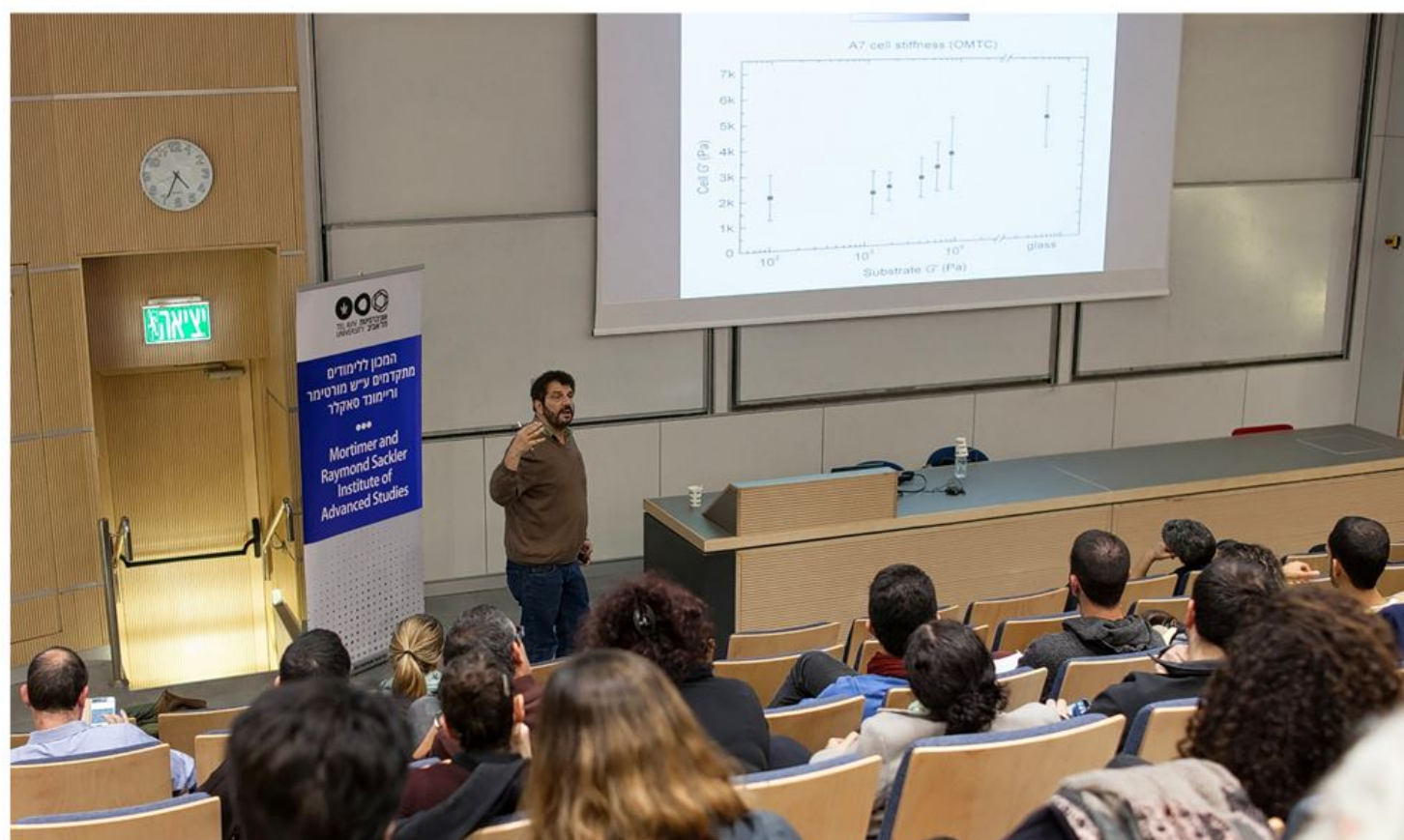
The colloquium will be held on Monday,
26 December 2016, at 16:00,
Edzia and Tanesz Dach Auditorium (5),
Shenkar Physics Building,
Tel-Aviv University, Ramat-Aviv

הקולוקוויום יתקיים ביום שני,
26 בדצמבר 2016, בשעה 16:00,
אודיטוריום אדז'יה וטאנש דאך (5),
בניין שנקר לפיזיקה,
אוניברסיטת תל-אביב, רמת-אביב

כיבוד קל יוגש לפני ההרצאה | Light refreshments will be served before the lecture



Prof. Roy Beck-Barkai and Prof. David Weitz



Prof. David Weitz at his lecture

January 3, 2017

To: The Mortimer & Raymond Sackler Institute of Advanced Studies

Re: Scientific report on the visit of Prof. David Weitz

With the generous support of the Mortimer and Raymond Sackler Institute of Advanced Studies, we hosted between December 23-28th 2016, Prof. David Weitz as a Sackler lecturer 2016/2017 in Tel Aviv University. Prof. Weitz is a professor of physics & applied physics and professor of systems biology at Harvard University. He is the co-director of the BASF Advanced Research Initiative at Harvard, co-director of the Harvard Kavli Institute for Bionano Science & Technology, and director of the Harvard Materials Research Science & Engineering Center.

Prof. Weitz is best known for his work in the areas of diffusing-wave spectroscopy, microrheology, microfluidics, rheology, fluid mechanics, interface and colloid science, colloid chemistry, biophysics, complex fluids, soft condensed matter physics, phase transitions, the study of glass and amorphous solids, liquid crystals, self-assembly, surface-enhanced light scattering, force spectrum microscopy, and diffusion-limited aggregation.

During his visit, Prof. Weitz gave the key-note speech at the Israeli Physical Society annual meeting that took place in Tel Aviv University and was titled "New routes to amorphous structures". In his talk Prof. Weitz described unusual phase transitions that take advantage of soft matter. That included a new method for producing amorphous structure from materials that exhibit a very high propensity for crystallization. This was demonstrated through very rapid quenching of a precipitating solid through evaporation of the solvent in a spray-drying configuration. A second systems which was demonstrated is a nearly perfect colloidal crystal that does not possess any interfaces that induce melting. As a result, melting is delayed and the melting transition attains many hallmarks of a second order transition.

On December 26th, Prof. Weitz visited Tel Aviv University for one-on-one meetings and a delivered a second seminar. Given Prof. Weitz broad area of proficiency, the meetings were with various professors from different faculties and schools including Yuval Ebenstein and Yael Roichman from



The Raymond & Beverly Sackler
School of Physics and Astronomy
Prof. Roy Beck Barkai

Chemistry, Roy Beck, Eli Eisenberg, Yacov Kantor and Ron Lifshitz from physics and astronomy, Tal Dvir and David Sprinzak from life sciences, Ayelet Lesman and Yair Shokef from engineering, and Michael Kozlov from the medical school. The special Mortimer & Raymond Sackler Institute of Advanced Studies seminar was titled "Universal correlation between stiffness and volume for living cells". This illuminating talk presented mostly unpublished results correlating the stiffness of cells to cell volume. This affects both the mechanics and the gene expression in the cell, and even impacts the differentiation of stem cells. In addition, Prof. Weitz discussed new measurement techniques that probe the consequences of the cell stiffness on internal cell dynamics.

In summary, Prof. Weitz visit in Tel Aviv University was extremely productive. During the visit Prof. Weitz was available to numerous discussions with many young and more advanced researchers on campus. I greatly appreciate the donors' contribution allowing this visit to take place.

Sincerely,

Prof. Roy Beck

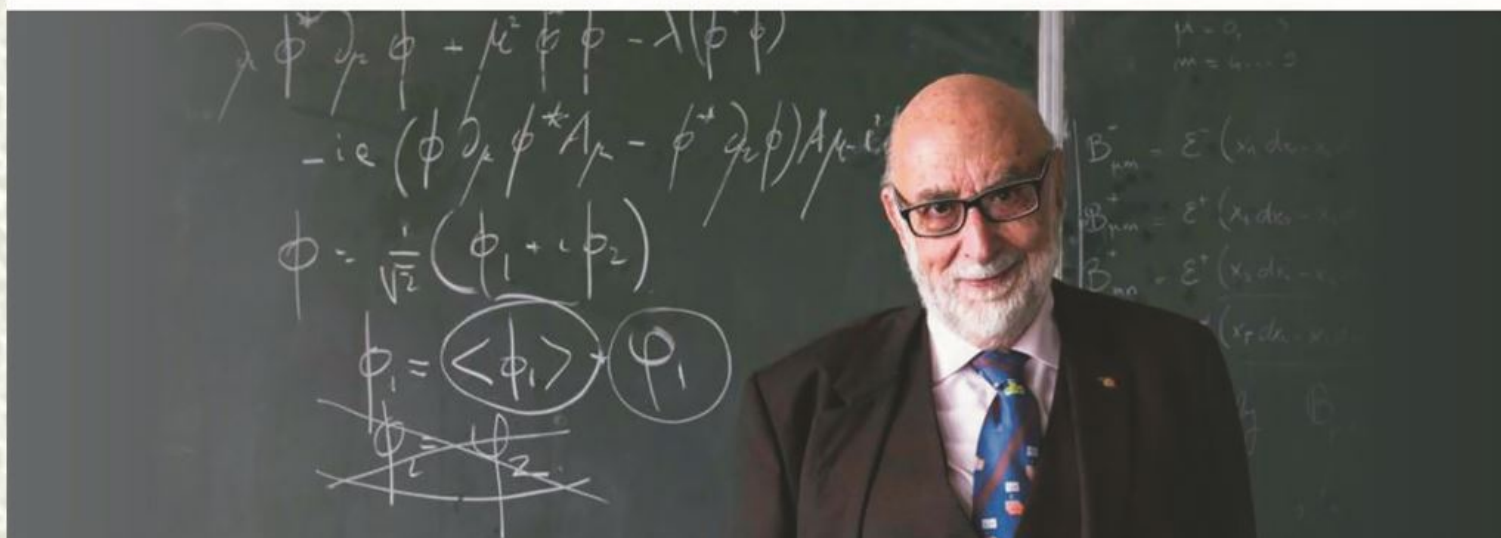
PROFESSOR FRANÇOIS ENGLERT



Prof. François Englert, Sackler Lecturer 2016/2017, is Belgian physicist who was awarded the 2013 Nobel Prize for Physics "for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider". Prof. Englert is a longtime Raymond & Beverly Sackler Senior Professor by Special Appointment.

Prof. Englert received degrees in electromechanical engineering (1955) and physics (1958) from the Université Libre de Bruxelles (Free University of Brussels; ULB) before receiving a doctorate in physics from ULB in 1959. He was a research associate (1959–60) and an assistant professor (1960–61) in physics at Cornell University in Ithaca, New York. There he began collaboration with Belgian physicist Robert Brout. Prof. Englert returned to ULB in 1961, becoming a professor there in 1964. With Brout he was Co-Director of the Theoretical Physics Group at ULB (1980–1998) when he became a professor emeritus. Prof. Englert was a Visiting Scholar (1984–1985) and Past Institute Member (1988–1991) at the Mortimer and Raymond Sackler Institute of Advanced Studies, Tel Aviv University.

Prof. Englert received many honors for his work, including the Francqui Prize (1982), the HEPP Prize from the European Physical Society (1997, shared with Brout and Higgs), the Wolf Prize in physics (2004, shared with Brout and Higgs), and the J.J. Sakurai Prize (2010, shared with Brout, Higgs, Guralnik, Hagen, and Kibble).



רקטור האוניברסיטה, פרופסור ירון עוז, וביה"ס לפיזיקה ולאסטרונומיה
מזמינים אתכם, התלמידים המצטיינים של בית הספר, למפגש מיוחד עם

פרופסור פרנסואה אנגלר

פרופסור סאקלר במינוי מיוחד,

חתן פרס נובל לפיזיקה

פרופסור אמריטוס, האוניברסיטה החופשית של בריסל, בלגיה

The University Rector, Professor Yaron Oz, and School of Physics & Astronomy
invite you, Honor Students of the School, to a special meeting with

Professor François Englert

Sackler Professor by special appointment,

Nobel Prize Laureate in Physics

Professor Emeritus, Université libre de Bruxelles, Belgium

The meeting will be held on Sunday,
1 January 2017, at 16:00,
Flexer Hall (118), Kaplun Building,
Tel-Aviv University, Ramat-Aviv

המפגש יתקיים ביום ראשון,
1 בינואר 2017, בשעה 16:00,
אולם פלקסר (118), בניין קפלון,
אוניברסיטת תל-אביב, רמת-אביב

כיבוד קל יוגש לפני המפגש | Light refreshments will be served before the meeting



Prof. Dan Maoz - Chair of the Sackler School of Physics and Astronomy, Prof. Yaron Oz - Rector of TAU, Prof. Francois Englert and Prof. Marek Karliner - Director of the IAS



Prof. Francois Englert at the special meeting with the Honor Students of the School of Physics & Astronomy



21 January 2017

MK- 3062

Re: Scientific report on the visit of Prof. François Englert

Prof. François Englert, Nobel Prize Laureate in Physics and Professor Emeritus from Université libre de Bruxelles, visited TAU between December 18, 2016 – January 3, 2017 as a Sackler Professor by Special Appointment.

Prof. Englert was awarded the 2013 Nobel Prize in Physics "for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider".

Prof. Englert has made contributions in statistical physics, quantum field theory, cosmology, string theory and supergravity. He is the recipient of the 2013 Prince of Asturias Award. He was also awarded the 1982 Francqui Prize, the 1997 HEPP Prize from the European Physical Society, the 2004 Wolf Prize in physics and the J.J. Sakurai Prize. He is a Professor Emeritus at Service de Physique Théorique at the Université Libre de Bruxelles (ULB) and a Sackler Professor by Special Appointment at Tel Aviv University.

During his visit, Prof. Englert held a special meeting with the Honor Students of the Raymond and Beverly Sackler School of Physics and Astronomy (1 January 2017), hosted by the Rector, Prof. Yaron Oz and by the physics chairman, Prof. Dan Maoz. The meeting was enthusiastically attended by the very best physics students. It was a huge success. It evoked many important questions and left a priceless mark on the students. Prof. Englert also held informal meetings with faculty and research students. Those meetings, with both the young and the more advanced researchers on campus, were highly inspiring and stimulating. Several particularly fruitful meetings were held with Prof. Yakir Aharonov, Wolf Prize Laureate.

During the visit Prof. Englert told me several times that his stay at Tel Aviv University was very successful. He also expressed his gratitude for the hospitality and the hard work of the administrative staff at the Institute for Advanced Studies in preparation for the visit which made his stay so smooth and enjoyable.

Once again, I would like to express my deep appreciation for your continuous support that makes such visits possible.

Sincerely

Marek Karliner
Professor of Physics
Director of the Institute of Advanced Studies

PROFESSOR VICTOR SHRIRA



Prof. Victor Shrira, Sackler Scholar 2016/17, is Professor of Applied Mathematics at the School of Computing and Mathematics at Keele University, UK. He is also former Benson Ford Professor of Applied Mathematics in UCC, Cork, Ireland, and former leading scientist and Head of Group P. P. Shirshov, Institute of Oceanology Russian Academy of Sciences, Moscow. He was awarded the Medal for young scientists of the USSR Academy of Sciences for the best work in the fields of physical oceanography, physics of atmosphere, and geography (1986).

Prof. Shrira published more than a hundred refereed papers – h-index 19, i10 index 37. He is the Editor of the journal Nonlinear Processes in Geophysics (since 1994) and serves as Reviewer for several journals such as the Journal of Fluid Mechanics, Journal of Physics of Fluids, Physica D, Physical Review Letters, Physical Review E, Physics Letters A, Geophysical Research Letters, Journal of Geophysical Research: Oceans, Journal of Physical Oceanography.

His research interests are nonlinear wave theory, wind waves, freak waves, wave turbulence, internal waves, wave-flow interactions, wave patterns, basic fluid dynamics, instabilities, remote sensing of sea surface and processes in the ocean interior, tsunami. His research was supported by the EU and UK Research Councils, Royal Society, Irish foundation for Basic Research, US Office of Naval Research, etc.

פרופסור ויקטור שרירה

המחלקה למתמטיקה
אוניברסיטת קיל, בריטניה

Professor Victor Shrira

Department of Mathematics
Keele University, United Kingdom

Mechanical Engineering Seminar | סמינר הנדסה מכנית

KINETIC EQUATIONS VS DIRECT NUMERICAL SIMULATIONS OF WEAKLY NONLINEAR RANDOM WAVE FIELDS: WHAT IS WRONG WITH THE KINETIC EQUATIONS?

The lecture will be held on Monday,
19 December 2016, at 14:00, Room 206,
Wolfson Mechanical Engineering Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום שני,
19 בדצמבר 2016, בשעה 14:00,
חדר 206, בניין וולפסון להנדסה מכנית,
אוניברסיטת תל-אביב, רמת-אביב.

Geosciences Colloquium | קולוקוויום מדעי כדור הארץ

INERTIAL WAVES AND DEEP OCEAN MIXING

The lecture will be held on Monday,
26 December 2016, at 11:10,
Holcblat Hall (7), Shenkar Physics Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום שני,
26 בדצמבר 2016, בשעה 11:10,
אולם הולצבלט (7), בניין שנקר לפיסיקה,
אוניברסיטת תל-אביב, רמת-אביב.

כיבוד קל יוגש לפני כל הרצאה | Light refreshments will be served before each lecture



Prof. Eyal Heifetz and Prof. Victor Shrira



Prof. Victor Shrira at one of his lectures

Long everyday discussions were held with *Dr Yaron Toledo* and his group: the most tangible outcome is that considerably advance has been made in preparing joint paper of Victor with Yaron on surface waves upon a boundary-layer type shear current. What remains to be done is just a straightforward technical work which will be accomplished involving the MSc student *Oshrat Klei*. An idea came up

to try to extend the use of the recently acquired by Yaron ADCP in such a way that it might be possible to measure characteristics of a “bubbly layer” beneath the surface caused by wind wave breaking and air entrainment. The idea was discussed together with Prof. Eliezer Kit, Dr. Yaron Toledo and with me, as well as with Mr *Rotem Sofer* (PhD student of Yaron and Prof. Eliezer Kit). This bubbly layer plays an important but poorly understood role in the ocean atmosphere exchange. At the moment it is not clear what quality information could be extracted in such a way since any progress depends on good will and help of the device manufacturer; the stakes are high, the possibility looks exciting. On the practical level it was agreed that Mr Rotem Sofer will work on this tantalizing idea.

With Dr. *Gali Hendin* Prof. Shrira discussed her work on modelling nonlinear patterns in wind flow above sea waves and was able to help her in connecting her research with other relevant works. He also had a lot of discussions with Mr *David Kouskoulas* (PhD student of Y. Toledo) on wave-current interactions centered on his idea of nonlinear interactions between “standard” wave modes and those which appear entirely due to current. These discussions changed David’s understanding of the problem and hopefully helped him to find his way. Victor apparently also enjoyed discussions with Mr *Teodor Vrecica* (PhD student of Y. Toledo) and was impressed by the progress in his work on random wave shoaling. His substantial discussions with Mr *Pavel Chernyshov* (PhD student under joint supervision of Y. Toledo and myself) were concerned with the unresolved fundamental issue of X-band radar measurements of waves and currents. At present there are much more questions than answers, we hope that later these discussions will lead to valuable answers. Brief discussions were held with Mr *Naor Naaman*, Mr *Yuval Yevnin* and Mr *Eyal Ginzburg* (students of Y. Toledo) on sea surface currents measurements using HF radars and on wave-current interactions. Mutually beneficial discussions were held with Prof. *Eliezer Kit* on a wide range of topics.

A number of intense discussions were held with Prof *Eyal Heifetz* (Department of Geosciences). In contrast to a more wide-ranging discussions held during the first part of Victor’s stay, this time they focused on a specific collaborative project concerned with breaking of inertial and internal gravity waves on the continental shelf break and their interaction with the longshore current off the coast of Israel. The aim of this project is to identify and quantify physical mechanisms enhancing diapycnal diffusivity on the shelf break and on the current edge. It was agreed that they will collaborate through a joint PhD student. An enthusiastic candidate has been found, but no specific arrangements have been made during the stay. It was agreed that both sides will push forward this project but it might take time before an optimal technical arrangement is found.

During this visit, Prof. Shrira continued very interesting discussions with Dr *Gregory Zilman* on the problem of rogue waves in the ocean, they became much more focused this time. A plan of a joint work on the effect of rogue waves on marine vessels was discussed. It was decided to focus on one particular mechanism of interaction of ship and random waves. A joint paper and, perhaps, a proposal is a real possibility.

Fruitful discussion was held with Prof. *Boris Malomed* on two-dimensional solitary waves. Possible intriguing connections with the problem of rogue waves in the ocean have emerged as a result. Very stimulating discussions were also held with Prof. *Shmulik Marco* and Dr. *Pavel Kishcha* (Department of Geosciences).

Overall, from perspective of both sides it was a very interesting and intense visit. It was more focused than the first one. I am convinced that Prof. Shrira gained a lot from this visit. All colleagues of Prof.

Shrira here in TAU certainly benefited from the discussions with him. We all are very grateful indeed to the Sackler foundation for the privilege to have Prof. Shrira here as a Sackler Scholar. I have all grounds to expect that that the seeds of collaborations sowed during this visit will bring in tangible fruits.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Shemer', written in a cursive style.

Professor Lev Shemer

PROFESSOR MIRANDA SCHREURS



Prof. Miranda A. Schreurs (PhD, University of Michigan), Sackler Scholar 2016/2017, is Professor of Environment and Climate Policy at the Bavarian School of Public Policy at the Technical University of Munich. Her research focuses on climate change, low carbon energy transitions and environmental movements in Europe, the United States and Asia.

Prof. Schreurs has researched and taught at various Japanese universities and for a period of three years conducted research at the John F. Kennedy School of Government, Harvard University supported by a grant awarded by the MacArthur Foundation. She was a tenured associate professor in the Department of Government and Politics, University of Maryland, College Park before becoming Director of the Environmental Policy Research Center and Professor of Comparative Politics at the Freie Universität Berlin in 2007. From 2008 until 2016 she served as member of the German Advisory Council on the Environment.

In 2011, Prof. Schreurs was appointed by Chancellor Angela Merkel as a member of the German Ethics Commission on a Safe Energy Supply. She is currently Vice Chair of the European Environment and Sustainable Development Advisory Councils, a network of advisory councils across Europe; International Board Director of the Institute of Global Environmental Strategies; and on the Advisory Board of the Swiss National Foundation's NSF Research Program 71 on the Swiss Energy Transition. She has served on numerous governmental advisory bodies in China, Germany and other European countries.



פרופסור מירנדה שרוירס

ראש המחלקה למדיניות סביבתית ואקלימית
ב"ה"ס הבווארי למדיניות ציבורית, האוניברסיטה הטכנית של מינכן

Professor Miranda Schreurs

Chair, Environment and Climate Policy Department
Bavarian School of Public Policy, Technical University of Munich

Lecture | הרצאה

FEDERALISM, SUPRANATIONALISM, AND MULTI-LEVEL GOVERNANCE: OPPORTUNITIES AND BARRIERS IN CLIMATE POLICY MAKING

The lecture will be held on Thursday,
16 March 2017, at 18:15,
Segal Hall, Naftali Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום חמישי,
16 במרץ 2017, בשעה 18:15,
אולם סגל, בניין נפתלי,
אוניברסיטת תל-אביב, רמת-אביב.

Seminar | סמינר

INDUSTRIAL ECOLOGY: PERSPECTIVES FROM GERMANY

The seminar will be held on Monday,
20 March 2017, at 12:00, Room 106,
The Porter School of Environmental Studies Building,
Tel-Aviv University, Ramat-Aviv.

הסמינר יתקיים ביום שני,
20 במרץ 2017, בשעה 12:00, חדר 106,
בניין בית הספר ללימודי הסביבה ע"ש פורטר,
אוניברסיטת תל-אביב, רמת-אביב.

Light refreshments will be served before the Lectures | כיבוד קל יוגש לפני ההרצאות



Prof. Alon Tal, Prof. Gila Menahem, Prof. Miranda Schreurs,
Prof. Itai Sened and Dr. Arie Nesher



Prof. Miranda Schreurs at one of her lectures



Tel Aviv, 19/04/17

Ms. Ronit Nevo
Administrative Manager
The Mortimer & Raymond Sackler Institute of Advanced Studies
Tel Aviv University

Dear Ronit,

I am writing to thank you and the Sackler Institute of Advanced Studies for your help in bringing to Israel Prof. Miranda Schreurs as a Sackler Fellow. Prof. Miranda Schreurs was appointed by Chancellor Angela Merkel as a member of the German Ethics Commission on a Safe Energy Supply. From 2008 until 2016 she served as member of the German Advisory Council on the Environment and is vice chair of the European Environment and Sustainable Development Advisory Councils. Her main research areas are in international and comparative climate policy, environmental politics, and low-carbon energy transitions. She is involved in projects examining the energy transitions in Germany and Japan; climate policies of Europe, the United States, and China; and the politics of high-level radioactive waste disposal.

Schreurs came to Israel in two separate sessions; once in fall 2016 and once more recently, in March 2017. Her lecture on the May 20 was held in the Porter School for Environmental Studies (PSES) building, and was entitled 'Industrial Ecology: Perspectives from Germany'. It was given to a full classroom. The relevance of the topic to seeking an environmentally and economically sustainable future here in Israel cannot be overstated. Furthermore, the feedback I received was of high praise from both students and faculty alike who were in attendance.

I would like to take this opportunity to thank you and the donors for your help in bringing to Tel Aviv University (and Israel) first-rate scientists that enrich our scientific experience, allowing our students a direct access to them, while also promoting positive contact with our country.

Sincerely,

A handwritten signature in black ink, appearing to read 'Arie Nesher'.

Dr. Arie Nesher
Porter School of Environmental Studies
Tel Aviv University
Ramat Aviv 69977801, Israel
nesheren@post.tau.ac.il



Ms. Ronit Nevo
Mortimer and Raymond Sackler Institute of Advanced Studies
Tel Aviv University
Ramat Aviv, Tel Aviv 69978, Israel

May 7, 2017

Dear Ronit, Dear Gila, Dear colleagues of Tel Aviv Univ., Dear President Klafter,

I would like to take this opportunity to thank the Mortimer and Raymond Sackler Institute of Advanced Studies for the wonderful and enriching opportunity you provided me with to be able to spend time at Tel Aviv University during 2016/2017. I would like to thank my host at the Department of Public Policy, Prof. Gila Menahem as well as the many colleagues there who welcomed me so warmly: Prof. Itai Sened, Prof. Alon Tal, Prof. Dorit Kerret, Prof. Ram Fishman, Prof. Ravit Hananel, Ayelet Fishman, Prof. Dan Ben-David, Dr. Nimrod Rosler, and Dr. Shira Mor. Also many thanks to Dr. Amos Zehavi in whose office I worked. In addition, my thanks extend to the Porter School of Environmental Studies, where Dr. Arie Nesher, Prof. Alexander Golberg, and many others also offered me many opportunities for dialogue and exchange. I was happy to meet the new director, Prof. Colin Price and appreciate the kindness of the former director, Prof. Dan Rabinowitz as well.

While at Tel Aviv University, I gave several lectures.

On January 30 I gave a lecture in a joint seminar run by Prof. Itai Sened and the Arava Institute for Environmental Studies in Eilat Eilat to an audience of about 50. The lecture was entitled, “Global Renewable Energy Leaders in the Era of Trump: Challenges and Opportunities.” This was my first time to the Arava Institute and I was impressed to see the cooperation that was developing between Tel Aviv University’s Department of Public Policy and the Arava Institute.

On March 16 I gave a lecture entitled, “Federalism, Supranationalism, and Multi-level Governance: Opportunities and Barriers in Climate Policy Making” in the Department of Public Policy. The lecture focused on climate policy developments in the United States during the Barack Obama era and with the election of Donald Trump.

My lecture on “Industrial Ecology: Perspectives from Germany” (March 20, 2017) came at the invitation of Prof. Alexander Golberg and Dr. Arie Nesher. In the lecture, I exposed students to the ways in which environmental concepts are becoming embedded in German industrial



practices. Both Dr. Golberg's students as well as a group of international students studying at the Porter School attended the lecture.

On March 21, I gave a guest lecture in Prof. Dorit Kerret's class on "Civil Society and the Environment". There were perhaps 40 or 50 students in the class. The students appeared interested in the ways in which they can make a difference in their own community.

While at Tel Aviv University, I advised the Department of Public Policy's PhD candidate Gil Barnea about articles he is writing for his PhD thesis. I invited Mr. Barnea to join in on international PhD conferences which I organize. Dr. Barnea participated this spring and gave a presentation on the synthetic control method. Through the connections he made, he is now working on a co-authored paper with a German PhD student and is also involved in helping to organize a book project (described more fully below). I have also agreed to co-supervise an MA student, Adi Pinchas, together with Prof. Alon Tal. She is writing her MA thesis on renewable energy scenarios for Israel.

During my stay at Tel Aviv University, I also worked with Prof. Dorit Kerret on the plans for a joint workshop on the Universities' Role in Promoting Sustainable Education – Integrating Theory, Research and Good Practice. The workshop is to be held between TAU-FUB-TUM and is to be held on June 7 and 8. In addition, Prof. Alexander Golberg invited me to participate in a conference he will be holding on May 24 addressing offshore renewable energy (especially the potential for algae).

Finally, together with many of the colleagues I have come to know at Tel Aviv University and several of my PhD students from the Technical University of Munich, as well as a few colleagues from other Israeli universities, we are planning to work together on a book on Israeli environmental policy. I will be applying for funding from the Erasmus program for this initiative so that we can hold a workshop in Israel in the fall or winter. We are also looking into the possibility of bringing Tel Aviv University students through the Erasmus program to the TUM and visa versa.

My time at Tel Aviv University as a Sackler Scholar was highly rewarding and I am very grateful that you made this opportunity available to me. I am sure that the cooperation which was started and deepened during this time will continue long into the future.

Sincerely,

Miranda A. Schreurs
Professor for Environmental and Climate Policy

PROFESSOR THOMAS PETES



Prof. Thomas Petes, Sackler Lecturer 2016/2017, is the Minnie Geller Professor of Genetics in the Department of Molecular Genetics and Microbiology at Duke University School of Medicine. He received his Sc.B. in Biology (*cum laude*) from Brown University and his Ph.D. in Genetics from the University of Washington. He did post-doctoral research with D. H. Williamson at the National Institute for Medical Research in London and he was a post-doctoral researcher with David Botstein at M.I.T. He was an Assistant, Associate, and full Professor at the University of Chicago before moving to the University of North Carolina in 1988. In 2004, he moved to Duke University to become Chair of the Department of Molecular Genetics and Microbiology, completing his term as Chair in 2009.

For his whole career, Prof. Petes has been interested in mechanisms that alter the eukaryotic genome. In particular, he has investigated mutants that destabilize the yeast genome as a model for understanding the genetic instability associated with cancer. He has also contributed to our current knowledge of the mechanisms of meiotic and mitotic recombination.

Prof. Petes is a member of the National Academy of Sciences, and the American Academy of Arts and Sciences. He is also a Fellow of the American Association for the Advancement of Science and the American Academy of Microbiology. He was Vice President (2001) and President (2002) of the Genetics Society of America (GSA) and in 2013 he was awarded the Thomas Hunt Morgan Medal from the GSA for lifetime contributions to the field of Genetics.



פרופסור תומס פיטס

פרופסור לגנטיקה ע"ש מיני גלר
המחלקה לגנטיקה מולקולרית ומיקרוביולוגיה
ביה"ס לרפואה של אוניברסיטת דיוק דורהאם, צפון קרוליינה

Professor Thomas D. Petes

Minnie Geller Professor of Genetics
Department of Molecular Genetics and Microbiology
Duke University School of Medicine, Durham, North Carolina

Lecture | הרצאה

STRESS-INDUCED GENOMIC REARRANGEMENTS

The Lecture will be held on Sunday,
26 February 2017, at 13:15,
Ephraim Katzir Biotechnology Club, Green Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום ראשון,
26 בפברואר 2017, בשעה 13:15,
מועדון אפרים קציר, בניין גרין לביוטכנולוגיה,
אוניברסיטת תל-אביב, רמת-אביב.

Lecture | הרצאה

GENETIC INSTABILITY INDUCED BY REPEATED SEQUENCES

The Lecture will be held on Tuesday,
28 February 2017, at 10:15,
Ephraim Katzir Biotechnology Club, Green Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום שלישי,
28 בפברואר 2017, בשעה 10:15,
מועדון אפרים קציר, בניין גרין לביוטכנולוגיה,
אוניברסיטת תל-אביב, רמת-אביב.

כיבוד קל יוגש לפני כל הרצאה | Light refreshments will be served before each lecture



Prof. Martin Kupiec and Prof. Thomas Petes



Prof. Thomas Petes at one of his lectures

Tel Aviv, 19/3/17

Ms. Ronit Nevo
Administrative Manager
The Mortimer & Raymond Sackler Institute of Advanced Studies
Tel Aviv University

Dear Ronit,

I am writing to thank you and the Sackler Institute of Advanced Studies for your help in bringing to Israel Prof. Thomas Petes as a Sackler Lecturer. Prof. Petes (Tom) is a member of the American National Academy of Sciences, and received numerous awards and prizes, as a world expert in the processes that maintain the genome stable. Genome instability is a hallmark of cancer cells, and changes in the genome thus promote cancer.

Prof. Petes came to Israel for two weeks, and gave two amazing scientific lectures in our Faculty. The lectures (on 26/2 and 28/217) were given at the Ephraim Katzir Conference Room at the Green Building for Biotechnology, which was packed with students and faculty, not only from our own Faculty (Life Sciences), but from Physics, Chemistry, Computer Science and Medicine too. Additional seats had to be brought in, and some people even sat on the floor. The feedback I received from many people, students and investigators alike, was amazing. In addition to his lectures, Prof. Petes found time to meet with young and established PIs, exchanging ideas and planning possible collaborations. He also met with students working on subjects related to his own, and was favorably impressed by their high scientific level. Tom had a great time, and we also took the time to visit Jerusalem and the Hula lake (Prof. Petes is an amateur bird photographer). He wrote from North Carolina thanking us for a great visit, and promised to bring his family next time.

I would like to take this opportunity to thank you and the donors for your help in bringing to Tel Aviv University (and Israel) first-rate scientists that enrich our scientific experience, allowing our students a direct access to them, while showing them the nice and friendly face of our country.

Sincerely,



Prof. Martin Kupiec

Pasha Gol Chair for Applied Microbiology,
Director, The Constantiner Institute for Molecular Genetics,
Department of Molecular Microbiology and Biotechnology,
Tel Aviv University, Ramat Aviv 69978, Israel.
E-Mail: martin@post.tau.ac.il, Phone: 972-3-640-9031, Fax: 972-3-640-9407.

PROFESSOR RODULF PODGORNIK



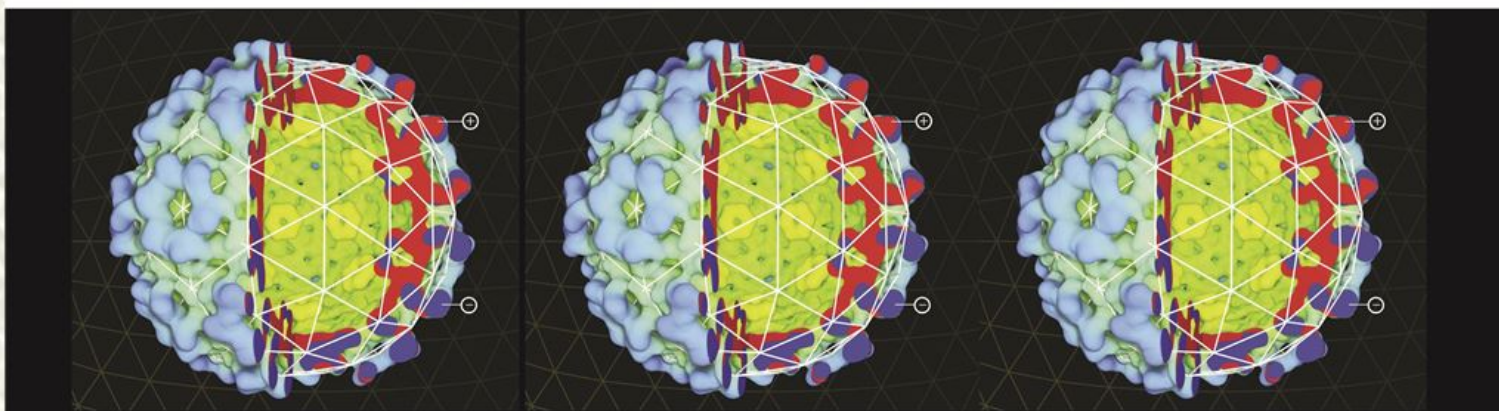
Prof. Rudolf Podgornik, Sackler Lecturer and Nirit and Michael Shaoul fellow 2016/2017, is professor of Physics (Faculty of Mathematics and Physics) and of Biophysics (Medical Faculty) at the University of Ljubljana and the head of the research program Biophysics of polymers, membranes, gels, colloids and cells, financially supported by the Slovene Agency for Research and Development. Since 2011 he is also adjunct professor at the Physics Department, University of Massachusetts, Amherst and since 2013 an adjunct professor at the Materials Science & Engineering Department at the Case Western Reserve University, Cleveland. He was a Senior Staff Member at the Jozef Stefan Institute in Ljubljana (1990-1992), and until 2010 he was an adjunct researcher at the National Institutes of Health, Bethesda, Maryland.

His field of research is soft matter, the physics of coulomb fluids, macromolecular interactions and in particular the Lifshitz theory of dispersion interaction, the physics of membranes, polymers and polyelectrolytes and especially the physics of DNA.

Prof. Podgornik won the Kidric national award for scientific accomplishments (Ljubljana, Slovenia, 1991), the DCRT/NIH Director's award for recognition and appreciation of special achievement (NIH, USA, 1995) and the Zois national award for excellence in scientific research – the highest award for scientific achievement in Slovenia, which can be obtained only once in a lifetime (1999).

His research was supported by the EU Sixth Framework Programme research grant, Slovenian-Israeli Research Cooperation Grant with D. Harries from Hebrew University, the Slovene research agency and the Leverhulme Trust and by the Long Range van der Waals - London Dispersion Interactions For Biomolecular and Inorganic Nanoscale Assembly.

Prof. Podgornik published more than two hundred refereed papers which were cited over 4,300 times – H-index=37 (WOS Oct 2015), and over 5,100 citations – H-index=42 (Google scholar Oct 2015). He is the co-author of two Textbooks in Slovene: Elektromagnetno polje, (Matematika - fizika, 51). Ljubljana: DMFA - založništvo, 2012. (Electromagnetic field) and Rešene naloge iz mehanike kontinuov, (Zbirka izbranih poglavij iz fizike, 35). Ljubljana: DMFA - založništvo, 2001 (Solved exercises in continuum mechanics). And he is also the co-editor of two books: Electrostatic effects in soft matter and biophysics: proceedings of the NATO Advanced Study Institute, Les Houches, France, 1-13 October 2000 and of Electrostatics of soft and disordered matter. Singapore: Pan Stanford, 2014.



Cover of PCCP, Artist: A. Siber

פרופסור רודולף פודגורניק

המחלקה לפיזיקה
אוניברסיטת לובליאנה, סלובניה

Professor Rudolf Podgornik

Department of physics
University of Ljubljana, Slovenia

קולוקוויום | Colloquium

ELECTROSTATICS GOES VIRAL

Abstract

Viruses are quintessential nanoparticles. Their proteinaceous shells are highly charged and electrostatic interactions are important for viral assembly and stability. I will describe several models of the effects of electrostatic interactions on viruses. Starting from an analysis of charge distribution and charge regulation by the bathing ionic solution, I will explore in detail several examples of the role of charge-charge interactions for capsid stability as well as the interactions between the capsid proteins and the compactified genetic cargo such as the encapsidated RNA and DNA molecules.

The Lecture will be held on Sunday,
30 April 2017, at 14:00,
Melamed Hall (6), Shenkar Physics building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום ראשון,
30 באפריל 2017, בשעה 14:00,
באולם מלמד (6), בניין שנקר לפיזיקה,
אוניברסיטת תל-אביב, רמת-אביב.

כיבוד קל יוגש לפני ההרצאה | Light refreshments will be served before the lecture



Prof. Marek Karliner - Director of the Institute of Advanced Studies,
Prof. Rudolf Podgornik and Prof. David Andelman



Prof. Rudolf Podgornik at his lecture

Tel Aviv University



The Raymond and Beverly Sackler
School of Physics & Astronomy
The Moyses Nussenzweig Chair in Statistical Physics
Professor David Andelman

אוניברסיטת תל-אביב

ביה"ס לפיזיקה ואסטרונמיה
ע"ש ריימונד ובברלי סאקלר
הקתדרה לפיזיקה סטטיסטית ע"ש משה נוסנצוויג
פרופסור דוד אנדלמן

June 9, 2017

Professor Marek Karliner, Director
Mortimer & Raymond Sackler Institute of Advanced Studies
Tel Aviv University

RE: Report on Prof. Rudi Podgornik's tenure
as Sackler Fellow of the IAS

Dear Professor Karliner,

I am writing to thank the Mortimer and Raymond Sackler Institute of Advanced Studies for hosting Prof. Rudi Podgornik as a *Sackler Fellow* in the Spring semester of 2016/17.

Prof. Rudi Podgornik is a professor of physics and biophysics at the University of Ljubljana, Slovenia, and a scientific councilor at the theoretical physics department of the J. Stefan Institute in Ljubljana, Slovenia. Rudi has also served as an adjunct scientist at the National Institutes of Health (NIH), and as an adjunct professor at the University of Massachusetts (UMass) and Case Western Reserve University. Prof. Podgornik is one of the world leading experts in *soft matter physics*, including the areas of biopolymers, membranes, Coulombic fluids, macromolecular and van der Waals interactions, the Casimir effect, and, in particular, the physics of DNA and viruses.

Prof. Podgornik visited Tel Aviv University as a *Sackler Fellow* between March 20 and April 20, 2017. During his stay in Israel, Rudi delivered several lectures at Tel Aviv University and other universities. At Tel Aviv University, Rudi lectured on the electrostatics of viruses (the Physics colloquium entitled: "*Electrostatic goes viral*"). He also delivered a three-hour mini-course on: "*Physics of DNA*", attended by 30 graduate students and faculty, and a seminar on macromolecular fluctuation interactions (condensed matter department seminar entitled: "*Van der Waals interactions, the Lifshitz theory, Coulomb fluids and all that jazz*"). At the Ben Gurion University of the Negev and at the Hebrew University in Jerusalem, Rudi gave a talk entitled: "*Polymers pushing polymers*". The topics that he covered in his talks were very timely and represent exciting new developments in the fields of physical virology, macromolecular interactions and polymer nanotechnology.

All of his talks drew a lively multi-disciplinary audience coming from physics, chemistry, life sciences, engineering and medicine, paving the way for future collaborations and describing the ongoing ones. In particular, Rudi is actively engaged in pursuing new research directions in collaboration with Prof. David Andelman and his students, regarding various aspects of advanced statistical mechanics of Coulombic fluids, such as ionic liquids and complex colloids, which led

recently to several important breakthroughs. Some of these common projects reached an advanced stage and are currently being prepared for publication.

Prof. Podgornik toured Israel extensively during the weekends and enjoyed his stay from both the professional as well as casual perspectives. We can thus conclude that his visit was very productive and successful - not only strengthening the connection between a leading scientist and Tel Aviv University at a time when one witness absurd calls for academic boycott of Israel, but also led to significant and tangible scientific progress.

I would like to take this opportunity and deeply thank you, the board of the Institute and its administrative staff headed by Ms. Ronit Nevo. The visit of Prof. Podgornik was arranged in the most impeccable and flawlessly way to the great satisfaction of Prof. Podgornik and his local hosts. I am certain that this visit will be followed by future visits and collaborations between Rudi and the TAU scientific community.

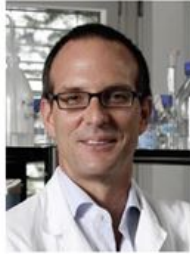
Last but not least, special thanks are due to the *Sackler Family* – the founding donors of the IAS - for their generous support that enables hosting international scientific leaders at Tel Aviv University. These leading scientists stay on our campus and greatly contribute to the exposure of our faculty and students to prime research and scientific advances, while exposing the IAS scholars to a wealth of activities conducted on our campus and throughout the Israeli scientific community.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'D. Andelman', enclosed within a simple, slightly irregular oval loop.

Professor David Andelman

PROFESSOR MAX GASSMANN



Prof. Max Gassmann, Sackler Lecturer 2016/17, is a trained Swiss veterinarian with Peruvian roots. He is full professor of Veterinary Physiology and head of the corresponding institute, as well as Director of the Zurich Center of Integrative Human Physiology (ZIHP), both institutions located at the University of Zurich. He graduated in Zurich before moving as a postdoctoral fellow to Stanford University Medical School where he joined the team of Prof. Paul Berg (Nobel Prize Laureate) for three years. Back in Zurich he first was lecturer at the Institute of Human Physiology before heading the one in the Veterinary Faculty.

Prof. Gassmann works on erythropoietin (Epo) and its receptor (EpoR) since 1992. Among other achievements he established an Epo-overexpressing mouse line that shows a constitutive hematocrit of 80%. That animal model became very well known in the community as several observations were unexpected, for example the fact that expression of Epo in the eye protected against light-induced retinal degeneration. Up to now, over 25 manuscripts dealing with that mouse model were published. Based on his research he won several awards and was offered simultaneously three full professorships in Physiology, namely at the University of Heidelberg, Erlangen and Zurich.

Prof. Gassmann is member of the Faculty of 1000 (F1000), Founding Member and Member of the Editorial Board of the newly established Journal "HYPOXIA" and has a standing visiting professorship at the Medical Faculty of the Universidad Peruana Cayetano Heredia (UPCH) in Lima, Peru. Apart from generating the above-mentioned Epo-overexpressing transgenic mouse line, he provided the community with the first working anti-HIF-1 α antibody harvest from chicken eggs, demonstrated that Epo and EpoR are both expressed in the human and mouse brain and showed that Epo has a variety of non-erythropoietic functions such as protection against stroke and retinal degeneration, Epo-induced regulation of the hypoxic ventilatory response and Epo's impact on cognition and motivation. At present, his H-index is 56 and he has published about 250 original articles and reviews.



פרופסור מקס גסמן

מנהל המכון לפיזיולוגיה וטרינרית
אוניברסיטת ציריך, שווייץ

Professor Max Gassmann

Director of the Institute of Veterinary Physiology
University of Zurich, Switzerland

Lecture | הרצאה

HOW DO WE ADAPT TO HIGH ALTITUDE?

The Lecture will be held on Tuesday,
25 April 2017, at 14:00, in Room 119,
Sackler Faculty of Medicine Building,
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום שלישי,
25 באפריל 2017, בשעה 14:00,
בחדר 119, בניין הפקולטה לרפואה ע"ש סאקלר,
אוניברסיטת תל-אביב, רמת-אביב

Lecture | הרצאה

OXYGEN AND IRON – THE PHYSIOLOGIC INTERPLAY

The Lecture will be held on Wednesday,
26 April 2017, at 12:00, in Meerbaum Hall,
Sackler Faculty of Medicine Building,
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום רביעי,
26 באפריל 2017, בשעה 12:00,
באולם מרבאום, בניין הפקולטה לרפואה ע"ש סאקלר,
אוניברסיטת תל-אביב, רמת-אביב

Meeting | פגישה

MEETING WITH GRADUATE STUDENTS

The Meeting will be held on Wednesday,
26 April 2017, from 13:15-15:00,
in Room 703, Sackler Faculty of Medicine Building,
Tel-Aviv University, Ramat-Aviv

הפגישה תתקיים ביום רביעי,
26 באפריל 2017, בשעות 13:15-15:00,
בחדר 703, בניין הפקולטה לרפואה ע"ש סאקלר,
אוניברסיטת תל-אביב, רמת-אביב

כיבוד קל יוגש לפני כל הרצאה | Light refreshments will be served before each lecture



Prof. Max Gassmann and Prof. Drorit Neumann



Prof. Max Gassmann at one of his lectures



Drorit Neumann Ph.D.

May 1, 2017

Report: Visit of Prof. Max Gassmann, Sackler Lecturer, at Tel Aviv University

The visit of Prof. Gassmann at Tel Aviv University was a special privilege of hosting a leading scientist in the field of physiological adaptation to hypoxia and Erythropoietin/iron interplay. In addition to his most appreciated scientific research and vision, Prof. Gassmann holds both medical and scientific knowledge, thus providing him with a broad overview of both disciplines.

Prof. Gassmann is the chairman of the Zurich Center for Integrative Human Physiology (ZIHP), which represents a cluster of biomedical excellence that successfully brings basic researchers together with research-oriented medical doctors, allowing novel integrative scientific collaborations. He has played a major role in expanding this prestigious center. ZIHP has established a large biomedical facility and has created the Zurich Center for Integrative Rodent Facility (ZIRP) that offers all required technologies to characterize rodent parameters, from serum analysis to blood pressure and mouse behavior. Apart from this, Prof. Gassmann is head of the Institute of Veterinary Physiology, which has a worldwide reputation in the field of applied hypoxic research.

Visit details

Prof. Gassmann lectured and met with researchers and students. In addition, his lectures were attended by Faculty of Tel-Aviv University campus, as well as scientists from affiliated hospitals (Sourasky, Sheba, Rabin medical centers), as well as scientists from Hadassa Medical center and Haemek hospital in Afula.

Lectures

During the course of his visit, Prof. Gassmann gave two lectures *which were highly attended and received excellent feedback*.

- April 24th - the first lecture: **"HOW DO WE ADAPT TO HIGH ALTITUDE?"**
- April 25th - the second lecture: **"OXYGEN AND IRON – THE PHYSIOLOGIC INTERPLAY"**

The second lecture was followed by a 2 hour informal meeting with graduate students. I sat in the meeting with the students and was very impressed with the depth and intensity of the discussions. After the meeting I received very positive feedback from the students who were extremely inspired by it.

Meeting with scientists at the university

April 23rd – evening

Prof. Moshe Mittelman and Dr. Howard Oster Sourasky Medical center, Dafni Giboa and Naamit Deshet Unger PhD students.



April 24th

Meeting with Dr. Yankel Gabet, Dr. Sahar Hiram Bab, Dr. Tamar Liron, Bitya Raphael, Dr. Albert Kolomansky, Faculty of Medicine

Lunch with Dr. Karina Levin, Pediatric Hematology, **Emek Medical Center, Afula**

Prof. Saul Yedgar, **Hadassa, Jerusalem**

Prof. Eliezer A. Rachmilewitz, (emeritus, **Department of Hematology, Wolfson Medical Center, Holon, Israel**).

April 25th

Meeting with Dr. Mickey Harlev (Chief Veterinarian), two hour tour of all animal facilities.

Prof. Rafi Korenstein Sackler Faculty of Medicine

Prof. M. Scheinowitz, Dept. of Biomedical Engineering & Neufeld Cardiac Research Inst., Tel Aviv University, Israel

In summary, the visit of Prof. Gassmann, an internationally recognized leader scientist, was truly effective from all possible aspects.

I would like to use this opportunity to thank the donors of the Sackler Institute of Advanced Studies for enabling this visit and Ms. Ronit Nevo for coordinating it in a most professional and pleasant manner.

Sincerely,

Drorit Neumann Ph.D.





**University of
Zurich** ^{UZH}

Institute of Veterinary Physiology

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Prof. Dr. Max Gassmann
Director
Phone +41 44 635 88 03
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maxg@access.uzh.ch

Prof. Drorit Neumann, Ph.D.
Department of Cell And Developmental Biology
Sackler School of Medicine, Room 316
Tel Aviv University
Tel Aviv 69978, Israel

Ms. Ronit Nevo
Administrative Manager
The Mortimer & Raymond Sackler Institute of
Advanced Studies
Tel Aviv University

Zurich, 2 May 2017

Sackler Lecture

Dear Drorit and Ronit

Thank you very much for the interesting and nice invitation to Tel-Aviv University to give the Sackler lecture. It was not only a great pleasure for me but I also got a lot of feed back from different colleagues and have already started a collaborative effort with one of them (Prof. M. Scheinowitz) and others are in the pipeline. Moreover, I was very pleased to see your animal facility that is run at very high standard levels. Congratulations for this. Finally, it was a pleasure to meet the students who indeed had a lot of questions regarding their careers. I was amazed to see how devoted they are to science.

Thanks once again to give me the opportunity to visit TAU and thanks also for the fantastic organization by Ronit.

I hope to visit you soon again.

With warm regards

University of Zurich
Institute of Veterinary Physiology


Prof. Dr. Max Gassmann
Director

PROFESSOR HENRI BERESTYCKI



Prof. Henri Berestycki, Sackler Scholar 2016/17, is professor of "classe exceptionnelle", chair of Mathematical analysis and modelling (since 2001) at EHESS (École des hautes études en sciences sociales), Paris, and Dean of Research, PSL Research University, Paris. His current research interests include non-linear partial differential equations, reaction-diffusion equations, mathematical models in biology and especially in ecology, and modelling in social sciences, in particular, the study of financial markets, urban planning, criminology, and the dynamics of riots. Recently he obtained two major grants: the FRG NSF grant in the USA (2011-2014), DMS-1065971, with Luis Caffarelli, Yanyan Li, Fanghua Lin and Luis Silvestre for activities based at the University of Chicago (awarded to H. Berestycki and L. Silvestre), and the European ERC advanced ("Senior") grant 2013-2018, project "ReaDi", Reaction-Diffusion Equations, Propagation and Modelling.

Prof. Berestycki has received a number of honors for his work: Prize Carrière (1988) and prize Sophie Germain (2004) from the Académie des Sciences Paris, the Humboldt Award from the Humboldt Foundation, Germany (2004), the Knight of the Legion of Honor (Chevalier de la Légion d'Honneur) (2010), he is also a Fellow of the American Mathematical Society (2012) and a Foreign Honorary Member of the American Academy of Arts and Sciences (2013).

Prof. Berestycki is the author of over 140 articles in international scientific journals, and currently serves as an Editorial Board member of: Analysis in Theory and Applications, Annales de l'Institut Henri Poincaré – Analyse non linéaire, Annali di Matematica Pura ed Applicata, Communications in Contemporary Mathematics, Journal of Differential Equations, Networks and Inhomogeneous Media.

פרופסור הנרי ברסטיצקי

הקתדרה לאנליזה ומידול מתמטי
ביה"ס ללימודים מתקדמים במדעי החברה
אוניברסיטת המחקר PSL, פריז, צרפת

Professor Henri Berestycki

Chair, Mathematical Analysis and Modelling
L'École des hautes études en sciences sociales
PSL Research University, Paris, France

Lecture | הרצאה

THE DYNAMICS AND PROPAGATION OF RIOTS

In this talk, I report on a model aiming at studying the dynamics and spreading of riots. It involves an epidemiological approach for the dynamics with a diffusion interaction term. I will discuss this model in the setting of the French riots in 2005 and compare its outcome with a rather detailed set of data for these riots. I will also describe some mathematical results regarding a related dynamical system that is relevant in this context.

The lecture will be held on Wednesday,
17 May 2017, at 14:00,
Room 309, Schreiber Building
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום רביעי,
17 במאי 2017, בשעה 14:00,
בחדר 309, בניין שרייבר
אוניברסיטת תל-אביב, רמת-אביב

Light refreshments will be served before the lecture | כיבוד קל יוגש לפני ההרצאה



Prof. Leonid Polterovich, Prof. Henri Berestycki, and Prof. Marek Karliner - Director of the Institute of Advanced Studies



Prof. Henri Berestycki at his lecture



School of Mathematical Sciences
The Raymond and Beverly Sackler
Faculty of Exact Sciences
Tel Aviv University

בית הספר למדעי המתמטיקה
הפקולטה למדעים מדויקים
ע"ש ריימונד ובברלי סאקלר
אוניברסיטת תל אביב

May 24, 2017

Visit of Prof. Henri Berestycki

Dear Madam/Sir,

The Sackler Fellow, Prof. Berestycki (PSL Research University, Paris, France), visited The Mortimer and Raymond Sackler Institute of Advanced Studies at Tel Aviv University in the period May 13 - May 20, 2017. During his visit, he participated in scientific discussions with colleagues and delivered a Sackler lecture "The dynamics and propagation of riots" at the Geometry and Dynamics Seminar, a weekly seminar run in the School of Mathematical Sciences. The lecture discussed applications of the theory of partial differential equations to modeling and prediction of propagation of riots in France. Given a hot subject and an interdisciplinary flavor of the lecture, it attracted a large audience. The Sackler funding provided an indispensable and unique opportunity for the School of Mathematical Sciences to host a top world expert in partial differential equations such as Prof. Berestycki.

Sincerely,

Leonid Polterovich
Professor, The Gordon Chair
School of Mathematical Sciences
Tel-Aviv University, Israel

PROFESSOR NEIL IMMERMANN



Prof. Neil Immerman, Sackler Lecturer 2016/17, is Professor of Computer Science in the College of Computer and Information Sciences at the University of Massachusetts, Amherst, USA. He earned a BS and MS in mathematics from Yale University in three years, after which he recovered by taking a year working for GTE Sylvania programming early computer controlled telephone switches. His program controlled 96 phone lines and ran on a PDP 8 using only 4K bytes of memory (which was all there was).

Prof. Immerman began his graduate career at Cornell University in Mathematical Logic and completed his Ph.D. in Theoretical Computer Science. His thesis developed the field of Descriptive Complexity, an area that has demonstrated that all important computational complexity classes have natural characterizations in logic.

Prof. Immerman's research applies logic to several areas of computer science including computational complexity theory, database theory, model checking and static analysis. One of Prof. Immerman's most famous results is the Immerman-Vardi Theorem, characterizing polynomial time as the set of properties expressible in first-order logic plus a least fixed-point operator, which formalizes the power of defining new relations by induction. Another is the Immerman-Szelepcsnyi Theorem which proved the — at the time — very surprising result that all nondeterministic space complexity classes are closed under complementation.

Before his current position, he has taught at Tufts University and Yale University, and has had visiting appointments at MSRI in Berkeley, Cornell University, the University of Wisconsin and Stanford University.

Prof. Immerman is the winner, jointly with Robert Szelepcsnyi, of the 1995 Goedel Prize in theoretical computer science. He is an editor of Logical Methods in Computer Science and of the Complexity Column of the SIGLOG newsletter. He is an ACM Fellow (elected in 2002) and a Guggenheim Fellow (2003-04). "Immerman Fest", a workshop in honor of Neil Immerman's 60th Birthday, was held during the Fifteenth International Workshop on Logic and Computational Complexity, July 2014 in Vienna, Austria.

Prof. Immerman is married to the computer scientist Susan Landau, who works on cybersecurity policy issues. He has two children; his son Daniel has a PhD in philosophy, while his daughter Ellie is completing her masters in technology and policy.

פרופסור ניל אימרמן

הקולג' למידע ולמדעי המחשב
אוניברסיטת מסצ'וסטס, אמהרסט, ארה"ב

Professor Neil Immerman

College of Information and Computer Sciences
University of Massachusetts, Amherst, USA

Lecture | הרצאה

DESCRIPTIVE COMPLEXITY: USING LOGIC TO UNDERSTAND COMPUTATION

Abstract

Most computational problems can be understood as computing a function from n -bit inputs to m -bit outputs. The bits of the output are properties of the input. It is striking that the computational complexity of computing the function in terms of time, space, number of processors, etc., can be completely understood via the expressive power of the logical language needed to describe these properties. This will be an accessible talk explaining descriptive complexity and the resulting insights gained. I will end by describing some of the progress achieved by many researchers over the last 5 years.

The Lecture will be held on Sunday,
14 May 2017, at 11:10,
Room 006, Schreiber Building,
Tel-Aviv University, Ramat-Aviv.

ההרצאה תתקיים ביום ראשון,
14 במאי 2017, בשעה 11:10,
בחדר 006, בניין שרייבר,
אוניברסיטת תל-אביב, רמת-אביב

Lecture | הרצאה

EFFICIENTLY REASONING ABOUT PROGRAMS

Abstract

When Alan Turing defined his computing machines in his original 1936 paper, he proved that even the simplest problems about their behavior, e.g., does a given machine when started on input 0 eventually halt, was not computable. Thirty-five years later, Steve Cook presented SAT as the first NP-complete problem. The understanding was that SAT was an inherently infeasible computational problem. Now that a large and increasing part of our world is organized and controlled by computer programs, we need as much automatic help as possible to assure that our programs safely and faithfully do what they should do.

In this talk, I will describe a language and methodology that has been built up to reason about properties of programs, including the reachability of pointers in programs that destructively update data structures. We automatically define correctness conditions for these programs. These are translated to SAT problems and then, in practice, efficiently checked using SAT solvers.

The Lecture will be held on Sunday,
21 May 2017, at 11:10,
Room 006, Schreiber Building,
Tel-Aviv University, Ramat-Aviv

ההרצאה תתקיים ביום ראשון,
21 במאי 2017, בשעה 11:10,
בחדר 006, בניין שרייבר,
אוניברסיטת תל-אביב, רמת-אביב

כיבוד קל יוגש לפני כל הרצאה | Light refreshments will be served before each lecture



Prof. Neil Immerman and Prof. Mooly Sagiv



Prof. Neil Immerman at one of his lectures



The Blavatnik School
of Computer Science
The Raymond and Beverly Sackler
Faculty of Exact Sciences
Tel Aviv University

ביה"ס למדעי המחשב
ע"ש בלווטניק
הפקולטה למדעים מדויקים
ע"ש ריימונד ובברלי סאקלר
אוניברסיטת תל אביב

June 20, 2017

A Summary of the Sackler Visit of Prof. Neil Immerman, UMASS

Professor Neil Immerman from UMASS visited Tel Aviv University as a Sackler Lecturer in the Mortimer and Raymond Sackler Institute of Advanced Studies on May 12 to 21, 2017.

Prof. Immerman is the founding father of Descriptive Complexity, an area which connects complexity of algorithms to Logic in Computer Science. He is the winner of the 1995 Gödel Prize, an ACM Fellow and a Guggenheim Fellow. Prof. Neil Immerman is one of the world experts on Finite Model Theory.

His visit was a tremendous success and will have a long time impact on the research in logic, programming languages and software engineering.

Here is a summary of the highlights of his visit.

On May 14, 2017, Prof. Immerman gave a lecture entitled "Descriptive complexity: using logic to understand computation" in the School of Computer Science, Schreiber building. The talk was well attended by researchers from computer science. In his talk, Prof. Immerman showed connections between his field (descriptive complexity) and general theoretical computer science.

On May 21, 2017, Prof. Immerman gave a second research talk titled: "Efficiently reasoning about programs". It took place in Schreiber 006, the School of Computer Science. The room was fully packed. In the talk Prof. Immerman explained connections to formally verifying the correctness of computer programs which is very important for software security.

Prof. Immerman also had numerous research meetings with the research groups of Dr. Noam Rinetzky, Dr. Sharon Shoham-Buchbinder, Prof. Alex Rabinowitz and Prof. Mooly Sagiv, all from the School of Computer Science. He also had a meeting with Dr. Roman Manevitz from Ben-Gurion University. Prof. Immerman gave us great feedback on our research and we have expanded



**The Blavatnik School
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our on-going collaboration with him on various issues regarding the mathematical foundations of reasoning about infinite state systems and in particular reasoning about liveness properties.

In summary, Prof. Immerman's visit was very fruitful and helpful for the computer science community at Tel Aviv University.

I would like to express my deepest gratitude to the Mortimer and Raymond Sackler Institute of Advanced Studies (IAS) for their very generous support. I'd like to thank the IAS team for the outstanding hospitality and for the superb organization.

Sincerely,

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