

# Bulletin of The ISRAEL PHYSICAL SOCIETY



  
TEL AVIV UNIVERSITY אוניברסיטת תל-אביב

 **IPS** 2010

הכנס ה-56 של  
האגודה הישראלית לפיזיקה  
The 56<sup>th</sup> meeting of the  
Israel Physical Society

כ"ח בכסלו תשע"א  
נר רביעי של חנוכה  
5.12.2010

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## Welcome to IPS2010

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Welcome to IPS2010 – The 56<sup>th</sup> Annual Meeting of the Israel Physical Society.

We have an exciting and packed program lined up for today's meeting, with over 200 contributions, covering a wide range of topics in physics and its related disciplines. The format of the IPS Meetings has evolved in recent years under the guidance of the IPS Council. It began with the introduction of Review Lectures at IPS2006 (HUJI), and short parallel talks at IPS2007 (WIS), leading to the present format, introduced at IPS2009 (BIU) and expanded here.

We open and close the meeting with Plenary Sessions, which will be held at **Bar-Shira Auditorium**. The opening plenary lecture will be given by M. Zahid Hasan, from Princeton University, who will talk about topological insulators and superconductors. The closing plenary lecture will be given by Douglas D. Osheroff, from Stanford University. He will tell us the story of his discovery of superfluidity in  $^3\text{He}$ , while still a graduate student at Cornell, for which he shared the 1996 Nobel Prize in Physics. Note that Prof. Osheroff will be giving a second talk at Tel Aviv University, on Tuesday 7/12/2010 at 17:00, in Lev Auditorium, on the nuclear spin ordered phases of solid  $^3\text{He}$ .

All other activities will take place in the buildings of the **Faculty of Exact Sciences**. These will begin with three Review Sessions – in Solid State, Soft Matter, and High Energy & Astrophysics – to be held simultaneously from 11:00 to 12:00. The next two hours will be devoted to a truly diverse and exciting Poster Session, during which we will also have a Trade Fair, with 10 companies presenting their products, as well as a Light Lunch. We are happy to announce that prizes will be awarded at the end of the meeting to the best student posters. We will have 22 parallel sessions – the first half from 14:00 to 15:30, and the second from 15:45 to 17:15. Please return promptly to Bar-Shira Auditorium at 17:15 for coffee and sufganiyot, followed by the Closing Plenary Session.

Many people, whose names appear on various lists in the next few pages, contributed to the preparation and to the planning of this meeting. I would like to thank the Council of the IPS for their guidance, and Avishai Dekel (President), Israel Mardor (treasurer) and Dikla Soae (secretary) for their ongoing assistance. I would like to thank the IPS2010 Scientific Program Committee for their help in selecting invited speakers and their hard work in sorting all the excellent abstracts that we received. Special thanks go to the Local Organizing Committee – to Yoram Dagan for taking care of the Trade Fair; to Eli Eisenberg for his devoted management of the IPS website; and to Sharon Feldman and her team for their dedicated assistance with all technical and administrative matters. I also wish to thank our sponsors and all the companies participating in the Trade Fair. Last but not least, I would like to thank all the participants for their great efforts in preparing their posters and lectures – the central and most important part of the meeting.

I wish you a pleasant and stimulating day here on the campus of Tel Aviv University.

Ron Lifshitz,  
Chair of IPS2010



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## From the President of the IPS

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On behalf of the Israel Physical Society (IPS), I welcome us all to the 56th annual General Assembly (2010), held this year in Tel Aviv University.

The IPS is a voluntary non-profit association which acts to stimulate physics research and education in Israel. Membership is open to all physicists, from Israel and abroad, including students and all those who conduct research and education in physics. An IPS membership carries partial memberships in the APS, EPS and CAP, involving reduced rates in symposia and subscriptions and eligibility to serving in their committees. We are working on expanding our involvement in EPS activities.

We continue the attempts to revamp the IPS status and activity. Our aim is to make it a worthwhile organization for the benefit of our physics community, following the examples set by the APS and EPS, and adding special features relevant to physics in Israel. Our current emphasis is on improving the content and format of our annual meetings, establishing IPS named prizes, solidifying the IPS magazine PhysicaPlus, upgrading the IPS webpage and creating a timely NewsLetter, setting up joint activities with sister societies in Israel and abroad as well as with the Israeli Academy of Sciences, and enlarging the body of IPS members both within the institutions of high education and among high-school teachers and researchers in the industry.

On the administrative side, thanks to an intense effort by our treasurer, Israel Mardor, we have concluded the very long-term formal process of registration as a society and balancing our budget. The IPS administrative and financial matters are now in good order, allowing the us now to focus on revamping the content rather than struggling with bureaucracy.

Our IPS prizes have become one of our most effective activities. The IPS prize for a young physicist is being awarded this year for the third time, to a physicist less than 10 years after the PhD, for special excellence in research. This year it is awarded jointly to Avishay Gal Yam (WIS) and Ehud Nakar (TAU), for their observational and theoretical work in high-energy astrophysics, respectively. The winner(s) is selected by a distinguished committee, based on nominations made by the deans/chairs of physics in the institutions of high education and the industry. The award is tentatively set to a starting sum of 10,000 shekels, and we are working on naming it and crystallizing the long-term funding for it. This prize has become the most prestigious prize for a young physicist in Israel, and we try to establish a co-sponsorship by the Israeli Academy of Sciences.

This is in addition to four distinguished prizes for physics graduate students. The traditional prizes in experimental physics and in theoretical physics are now complemented by two named prizes: the Ze'ev Fraenkel prize in particle physics, nuclear physics and astrophysics (sponsored by the Fraenkel family), and the Ilse Katz prize in Nano Science (sponsored by the Ilse Katz Institute for Nanoscale Science and Technology at BGU). The winners of this year's prizes are: Stanislav Burov (BIU, theory), Eilon Poem-Kalogerakis (Technion, experiment), Shikma Bressler (Technion, Fraenkel), Anna Osherov (BGU, Nano).



In order to allow all the above and more, the IPS needs your support. To begin with, this is by becoming a member and paying the annual fees. We have established a web registration procedure that allows each of us to register and pay online on the IPS website [www.israelphysicsociety.org](http://www.israelphysicsociety.org). In addition, you can make an impact by encouraging all your associates to join the IPS, especially students. But most important would be your participation in the council work by contributing ideas for new initiatives or for potential funding sources.

This is my last year of service as the IPS president. Vice president Yigal Meir of BGU is the candidate to be elected as the new president. It is also the last year for Israel Mardor as the treasurer and for Avi Schiller as academic secretary. Also for Dikla Soae as the IPS secretary. I would like to thank this dedicated team and the IPS council for their work, and to wish the new team great success.

I wish us all an enjoyable meeting this year, and a year of productive activity in physics research and education. Our 57<sup>th</sup> IPS General Assembly will be held in the Technion in December 2011.

Avishai Dekel,  
President of the IPS

## 2010 IPS Student Prizes

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- **The 2010 IPS Prize for a Graduate Student in Theoretical Physics**, is awarded to *Stanislav Burov*, of Bar Ilan University, for his work in the field of nonequilibrium statistical mechanics.
- **The 2010 IPS Prize for a Graduate Student in Experimental Physics** is awarded to *Eilon Poem-Kalogerakis*, of the Technion, for his work on radiative cascades and coherent exciton dynamics in single quantum dots.
- **The 2010 IPS Fraenkel Prize for a Graduate Student in Particle Physics, Nuclear Physics and Astrophysics**, is awarded to *Shikma Bressler*, of the Technion, for her work on the search for massive long-lived charged particles at the LHC.
- **The 2010 IPS Ilse Katz Prize for a Graduate student in Nano-Science** is awarded to *Anna Osherov*, of Ben Gurion University, for her work on chemically deposited thin semiconductor films, specifically the correlation between growth conditions, microstructure, and physical properties.

## 2010 IPS Prize for a Young Physicist

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**The 2010 IPS Prize for a Young Physicist** is awarded jointly to *Avishay Gal-Yam*, of the Weizmann Institute, and *Ehud Nakar*, of Tel Aviv University, for their observational and theoretical work in high-energy astrophysics, respectively.



## Council of the Israel Physical Society

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- President: Avishai Dekel, *Racah Inst. of Physics, Hebrew University, Jerusalem*, [dekel@phys.huji.ac.il](mailto:dekel@phys.huji.ac.il)
- Vice President: Yigal Meir, *Department of Physics, Ben Gurion University*, [ymeir@bgu.ac.il](mailto:ymeir@bgu.ac.il)
- Treasurer: Israel Mardor, *Soreq NRC*, [mardor@soreq.gov.il](mailto:mardor@soreq.gov.il)
- Academic Secretary: Avraham Schiller, *Racah Inst. of Physics, Hebrew University, Jerusalem*, [avraham@phys.huji.ac.il](mailto:avraham@phys.huji.ac.il)
- Council member: Ehoud Pazy, *Physics Department, Negev NRC, Beer Sheva*, [ehudp@nrcn.org.il](mailto:ehudp@nrcn.org.il)
- Council member: Yuval Garini, *Physics Department, Bar Ilan University*, [gariniy@mail.biu.ac.il](mailto:gariniy@mail.biu.ac.il)
- Council member: Zvi Rosenstock, *RAFAEL, Haifa*
- Council member: Eli Raz, *Ort Braude College, Karmiel*, [eliraz@braude.ac.il](mailto:eliraz@braude.ac.il)
- Council member: Michael Savin, *Davidson Institute of Science Education, Weizmann Institute*, [ntsavin@weizmann.ac.il](mailto:ntsavin@weizmann.ac.il)
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- Council member: Ron Lifshitz, *School of Physics & Astronomy, Tel Aviv University*, [ronlif@tau.ac.il](mailto:ronlif@tau.ac.il)
- Council member: Yoram Rozen, *Department of Physics, Technion*, [rozen@tx.technion.ac.il](mailto:rozen@tx.technion.ac.il)
- Council member: Cezar Bruma, *Ariel University Center of Samaria*, [edycb@post.tau.ac.il](mailto:edycb@post.tau.ac.il)
- Council member: Itzhak Yacobi, *Racah Inst. of Physics, Hebrew University, Jerusalem*, [yizhak@vms.huji.ac.il](mailto:yizhak@vms.huji.ac.il)
- Council member: Itzhak Tserruya, *Faculty of Physics, Weizmann Institute*, [tserruya@clever.weizmann.ac.il](mailto:tserruya@clever.weizmann.ac.il)
- Secretary: Dikla Soae, *Racah Inst. of Physics, Hebrew University, Jerusalem*, [ips@phys.huji.ac.il](mailto:ips@phys.huji.ac.il)





## IPS2010 Scientific Program Committee

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- Nir Davidson, WIS – Atomic, molecular & optical physics
- Avishai Dekel, HUJI – Astronomy & astrophysics
- Haim Diamant, TAU – Soft matter & chemical physics
- Yuval Garini, BIU – Biophysics
- Avraham Gover, TAU – Plasma physics
- Amit Kanigel, Technion – Superconductivity & magnetism
- Marek Karliner, TAU – High energy physics
- Nadav Katz, HUJI – Quantum information
- Ron Lifshitz, TAU – Chair
- Baruch Meerson, HUJI – Nonlinear physics
- Yigal Meir, BGU – Solid state, mesoscopic physics & nanosystems
- David Mukamel, WIS – Statistical physics
- Ehud Nakar, TAU – Astronomy & astrophysics
- Yossi Paltiel, HUJI – Applied physics
- Ehoud Pazy, NRCN – Materials physics
- Yoram Rozen, Technion – High energy physics
- Michael Savin, WIS – Physics education

## IPS2010 Local Organizing Committee

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- Yoram Dagan
- Eli Eisenberg
- Sharon Feldman
- Ron Lifshitz (Chair)

## IPS2010 Sponsors

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- The Center for Nanoscience and Nanotechnology, Tel Aviv University
- The Mortimer & Raymond Sackler Institute of Advanced Studies, Tel Aviv University
- The Raymond & Beverly Sackler Faculty of Exact Sciences, Tel Aviv University
- The Raymond & Beverly Sackler School of Physics & Astronomy, Tel Aviv University
- The Sackler Institute for Solid State Physics, Tel Aviv University
- The Sackler Institute for Theoretical Physics, Tel Aviv University
- The Sackler Institute of Astronomy, Tel Aviv University
- Fast Laser Group Ltd.



## Plenary Sessions

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### Opening Plenary Lecture

Chair: Ron Lifshitz

Place: Bar-Shira

09:30 -10:30 **M. Zahid Hasan**, Princeton University

*Bulk Topological Insulators and Superconductors: Discovery and the Frontier*

### Closing Plenary Lecture

Chair: Yoseph Imry

Place: Bar-Shira

18:00 -19:00 **Douglas D. Osheroff**, Stanford University

*The Story Behind the Discovery of Superfluidity in  $^3\text{He}$*

## Review Sessions

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### R1: Solid State and Quantum Physics

Chair: Amnon Aharony

Place: Lev (9)

11:00-11:30 **Yaron Silberberg**, Weizmann Institute

*An Easy Road to High-Noon: The Photonic Schrodinger Cat*

11:30-12:00 **David Goldhaber-Gordon**, Stanford University

*Coherence and Interactions in an Open Quantum Dot*

### R2: Soft Condensed Matter

Chair: David Andelman

Place: Dach (5)

11:00-11:30 **Stefano Ruffo**, Universita' di Firenze

*Dynamics of systems with long-range interactions*

11:30-12:00 **Eran Sharon**, Hebrew University

*Shaping via Active Deformation of Synthetic and Natural Elastic Sheets*

### R3: High Energy Physics and Astrophysics

Chair: Yaron. Oz

Place: Melamed (6)

11:00-11:30 **Dan Maoz**, Tel Aviv University

*Type-Ia Supernovae: How we learned to love the bomb but should not stop worrying*

11:30-12:00 **Gilad Perez**, Weizmann Institute

*Top Physics in the Large Hadron Collider (LHC) Era*



## Parallel Sessions

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Session A1 to Session A11: 14:00 – 15:30

Session B1 to Session B11: 15:45 – 17:15

### A1: High Energy Physics

Chair: Halina Abramowicz

Place: Melamed (6)

- 14:00-14:30 **Shlomit Tarem**, Technion  
*First Results from ATLAS*
- 14:30-14:45 **Yonit Hochberg**, Kfir Blum, Yosef Nir, Weizmann Institute of Science  
*Implications of large dimuon CP asymmetry in  $B_{d,s}$  decays on minimal flavor violation with low  $\tan\beta$*
- 14:45-15:00 **Ronen Ingbir**, Tel Aviv University  
*Measurement of neutral current cross sections at high Bjorken- $x$  with the ZEUS detector at HERA*
- 15:00-15:15 **Judy Kupferman**, Ben Gurion University  
*Black Hole Entropy Divergence and the Uncertainty Principle*
- 15:15-15:30 **Itamar Roth**, Tal Frank, Ehud Duchovni, Weizmann Institute of Science  
*New Data-Driven Jet-Quality Cuts with the ATLAS Detector in Proton-Proton Collisions at a Center-of-Mass Energy of 7 TeV*

### A2: Astronomy and Astrophysics I

Chair: Ehud Nakar

Place: Dach (5)

- 14:00-14:25 **Tal Alexander**, Weizmann Institute  
*Gravitational wave source dynamics around massive black holes*
- 14:25-14:50 **Uri Keshet**, Harvard Center for Astrophysics  
*Radio emission from galaxy clusters: one size fits all*
- 14:50-15:03 **Marcello Cacciato**, Hebrew University  
*Disk Instability in a Cosmological Context*
- 15:03-15:16 **Benny Trakhtenbrot**, Tel Aviv University  
*Black-Hole Mass and Growth Rate at  $z\sim 4.8$ : A Short Episode of Fast Growth Followed by Short Duty Cycle Activity*
- 15:16-15:29 **Shai Kaspi**, Stephen Rafter, Ehud Behar, Technion  
*Reverberation Mapping of the Lowest Mass AGNs*

## A3: Mesoscopic Physics and Nanosystems

Chair: Alexander Palevski

Place: Lev (9)

- 14:00-14:15 **Daniel Hurowitz**, Doron Cohen, Physics Department, Ben Gurion University  
*Quantum vs. stochastic non-equilibrium steady states in sparse or frustrated systems*
- 14:15-14:30 **Rani Arielly**, Yoram Selzer, School of Chemistry, Tel Aviv University  
*Towards Time Resolved Conductance Spectroscopy of Molecular Junctions*
- 14:30-14:45 **Philip Schiff**, Abraham Nitzan, Tel Aviv University  
*Kramers barrier crossing as a cooling machine*
- 14:45-15:00 **K. Velizhanin**, C.-C. Chien, Y. Dubi, M. Zwolak  
Los Alamos National Laboratory and Tel Aviv University  
*Driving denaturation: Nanoscale thermal transport as a probe of DNA melting*
- 15:00-15:15 **Gareth Conduit**, Yigal Meir, Ben Gurion University  
*An ab initio study of the Quantum Little Parks effect*
- 15:15-15:30 **M. Ben Shalom**, D. Rakhmilevich, M. Sachs, A. Ron, A. Palevski, and Y. Dagan, Tel-Aviv University, School of Physics and Astronomy  
*Quantum transport phenomena in  $LaAlO_3/SrTiO_3$  interface*

## A4: Superconductivity and Magnetism I

Chair: Amit Kanigel

Place: Holzblatt (7)

- 14:00-14:30 **Erez Berg**, Harvard University  
*Odd-Parity Topological Superconductors: Theory and Application to  $Cu_xBi_2Se_3$*
- 14:30-14:45 **Lilach Goren**, Ehud Altman, Condensed Matter Physics, Weizmann Institute  
*Quenching the superconducting state of cuprates with currents: A variational study*
- 14:45-15:00 **Amir Erez**, Yigal Meir, Ben Gurion University  
*Hubbard vs. XY models in two dimensions: a comparative study*
- 15:00-15:15 **Yoav Kalcheim**, Tal Kirzhner, Gad Koren, Oded Millo  
Hebrew University and Technion  
*Long range proximity effect in  $La_{2/3}Ca_{1/3}MnO_3$  (LCMO)/(100)YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7- $\delta$</sub>  (YBCO) ferromagnet/superconductor bilayers: Evidence for induced triplet superconductivity in the ferromagnet*
- 15:15-15:30 **Tal Kirzhner**, Gad Koren, Technion  
*Crossed andreev in d-wave superconductor-ferromagnet junctions in the vicinity of domain walls*

## A5: Solid State Physics

Chair: Avraham Schiller

Place: Shenkar 104

- 14:00-14:15 **Yuval Vinkler**, Avraham Schiller, Natan Andrei  
The Hebrew University and Rutgers University  
*Relaxation and nonequilibrium dynamics in single-molecule devices*
- 14:15-14:30 **Jianhui Wang**, H.A. Fertig, Ganpathy Murthy, L. Brey  
Indiana University, Weizmann Institute of Science, Ben-Gurion University  
University of Kentucky, Instituto de Ciencia de Materiales de Madrid (CSIC)  
*Excitonic effects in two-dimensional massless Dirac fermions*
- 14:30-14:45 **Anna Eyal**, Emil Polturak  
Department of Physics, Technion  
*Non faceted helium crystals support mobility*
- 14:45-15:00 **Shimon Lerner**, Paul Ben Ishai, Marian Paluch, Aharon Agranat, Yuri Feldman, Hebrew University of Jerusalem, Institute of Physics, Silesian University  
*Effective Correlation Measure for Electron Hopping in Ferroelectric  $KTaNbO_3$*
- 15:00-15:15 **Ariel Amir**, Stefano Borini, Yuval Oreg, Yoseph Imry  
The Weizmann Institute of Science, INRIM, Torino  
*Huge (but finite) intrinsic timescales in porous silicon : a test case for slow relaxations*
- 15:15-15:30 **E. G. Dalla Torre**, E. Demler, T. Giamarchi, E. Altman  
Weizmann Institute of Science, Harvard University, University of Geneva  
*Non-equilibrium steady states of open quantum systems: a real time RG approach*

## A6: Classical Optics

Chair: Steve Lipson

Place: Ornstein 103

- 14:00-14:15 **Sergey Nechayev**, Yuri Gorodetski, Vladimir Kleiner, Erez Hasman  
Mechanical Engineering & Russell Berrie Nanotechnology Institute, Technion  
*Plasmonic Aharonov-Bohm Effect: Optical Spin as the Magnetic Flux Parameter*
- 14:15-14:30 **Kobi Frischwasser**, Nir Dahan, Yuri Gorodetski, Vladimir Kleiner, Erez Hasman  
Mechanical Engineering & Russell Berrie Nanotechnology Institute, Technion  
*Spin Symmetry Breaking in Thermal Emission*
- 14:30-14:45 **Moshe G. Harats**, Ronen Rapaport, Adiel Zimran, Uri Banin, Gang Chen  
Racah Institute of Physics, Institute of Chemistry, & Center for Nanoscience and Nanotechnology, The Hebrew University, and Bel Laboratories, Alcatel Lucent, Murray Hill  
*Enhancement of two photon processes in quantum dots embedded in subwavelength metallic gratings*

- 14:45-15:00 **Andrey Shalit**, Yuri Paskover, Yehiam Prior  
Chemical Physics, Weizmann Institute, Chemistry Department, Princeton  
*Combined Time Frequency Detection by Single Shot Four Wave Mixing*
- 15:00-15:15 **Gil Porat**, Ofer Gayer, Ady Arie, Physical Electronics, Tel Aviv University  
*Efficient frequency down-conversion by simultaneous processes in a nonlinear optical quasicrystal*
- 15:15-15:30 **Micha Nixon**, Eitan Ronen, Moti Fridman, Amit Godel, Asher A. Friesem, Nir Davidson, Physics of Complex System, Weizmann Institute of Science  
*Phase Locking Thousands of Coupled Lasers*

## A7: Quantum Information

Chair: Nadav Katz

Place: Ornstein 111

- 14:00-14:30 **Shlomi Kotler**, Nitzan Akerman, Yinnon Glickman, Anna Keselman, Yehonatan Dallal & Roe Ozeri, Weizmann Institute of Science  
*Single Ion Lock-in Amplifier*
- 14:30-14:45 **Eli Megidish**, Tomer Shacham, Liat Dovrat, Michael Bakstein, Assaf Halevy, Hagai S. Eisenberg, The Hebrew University of Jerusalem  
*A Scalable multi-photon entanglement source*
- 14:45-15:00 **Yaron Kedem**, Lev Vaidman, Tel Aviv University  
*Modular values and weak values of quantum observables*
- 15:00-15:15 **Ido Almog**, Yoav Sagi, Nir Davidson, Weizmann Institute of Science  
*Direct measurement of the bath spectrum of an optically trapped colliding atomic ensemble*
- 15:15-15:30 **Ya'ara Rofe**, Yoni Shalibo, Ido Barth, Lazar Friedland and Nadav Katz  
Racah Institute of Physics, The Hebrew University  
*Quantum to classical transition in a superconducting Josephson phase circuit*

## A8: Soft Matter Physics

Chair: Haim Diamant

Place: Shenkar 204

- 14:00-14:30 **Oded Farago**, Noam Weil, Biomedical Engineering, Ben Gurion University  
*Entropy driven aggregation of adhesion sites of supported membranes*
- 14:30-14:45 **Shahaf Armon**, Eran Sharon, The Hebrew University  
*Geometry and Mechanics of Chiral Pod Opening*
- 14:45-15:00 **Dan Ben-Yaakov**, David Andelman, Rudi Podgornik  
Tel Aviv University and University of Ljubljana  
*Dielectric decrement as a source of ion specific effects*
- 15:00-15:15 **Sela Samin**, Yoav Tsori, Ben Gurion University  
*Vapor-Liquid Equilibrium in Electric Field Gradients*
- 15:15-15:30 **Kobi Barkan**, Haim Diamant, Ron Lifshitz, Tel Aviv University  
*Stability of Quasicrystals Composed of Soft Isotropic Particles*

## A9: Nonlinear Physics

Chair: Baruch Meerson

Place: Shnekar 222

- 14:00-14:30 **Alex Kamenev**, Dept. of Physics, University of Minnesota  
*Extinction in cyclic evolutionary models*
- 14:30-14:45 **Ido Barth**, Lazar Friedland, Racah Institute of Physics, Hebrew University  
*Classical and quantum fluctuations and self-fields in autoresonant phase-locking transitions*
- 14:45-15:00 **Gabriel Seiden**, Victor Steinberg, Weizmann Institute of Science  
*Chaotic Plume-Like Bursts in Rimming Flows*
- 15:00-15:15 **Oded Ben-David**, Jay Fineberg, The Hebrew University  
*Friction is Fracture*
- 15:15-15:30 **Shay I. Heizler**, David A. Kessler, Herbert Levine, Bar-Ilan University, Nuclear Research Center-Negev, & University of California, San Diego  
*Propagating mode-I fracture in amorphous materials using the continuous random network (CRN) model*

## A10: Material Physics

Chair: Ehoud Pazy

Place: Kaplun 118

- 14:00-14:15 **Eyal Yahel**, Yaron Greenberg, El'ad N. Caspi, Moshe P. Dariel, Guy Makov, Chris Benmore, Brigitte Beuneu, NRCN, Ben Gurion University, Argonne National Laboratory, & Laboratoire Leon Brillouin (CEA-CNRS)  
*Temperature-driven structural transformation in liquid bismuth*
- 14:15-14:30 **Tsachi Livneh**, Eran Sterer, Nuclear Research Center  
*Resonant Raman scattering at exciton states tuned by pressure and temperature in 2H-MoS<sub>2</sub>*
- 14:30-14:45 **D. H. Rich** and O. Moshe, Ben-Gurion University of the Negev  
*Selective control of emission of polarized light from GaN/AlN self-assembled quantum dots subject to variable excitation conditions and uniaxial interfacial stresses*
- 14:45-15:00 **Anna Osherov\***, Yuval Golan, Ben-Gurion University  
*Chemical Deposition of PbSe and PbS — From Nanocrystalline to Monocrystalline Thin Films*  
\*Recipient of the 2010 IPS Ilse Katz Prize for a graduate student in Nano-Science
- 15:00-15:15 **Leor Kronik**, Noa Marom, Jonathtan Garel, Ernesto Joselevich, Alexandre Tkatchenko, Jonathan Bernstein, Oded Hod, Weizmann Institute, Fritz-Haber-Institut, Berlin, & Tel Aviv University  
*Stacking and Registry Effects in Layered Materials: The Case of Hexagonal Boron Nitride*
- 15:15-15:30 **Eli Kraisler**, Guy Makov, Tel Aviv University, NRCN, & Ben-Gurion University  
*Spin-flip excited states via ground state density functional theory*

## A11: Physics Education

Chair: Michael Savin

Place: Ornstein 110

- 14:30-15:00 **עופר רימון**, המינהל למדע ולטכנולוגיה, משרד החינוך  
*חיזוק לימודי הפיזיקה מכיתה ז*
- 14:00-14:30 **מיכאל סבין**, הפיקוח על הוראת הפיזיקה, משרד החינוך  
*תפיסת מיקומה של הוראת הפיזיקה במערך מקצועות הלימוד בחטיבות הביניים*
- 15:00-15:30 **בת-שבע אלון**, המחלקה להוראת המדעים, מכון ויצמן  
*פיזיקה לכל ופיזיקה למצוינים: אתגרים ודרכי פעולה*

## B1: High Energy Physics (contd.)

Chair: Oren Bergman

Place: Melamed (6)

- 15:45-16:00 **S. Bressler\***, S. Tarem, S. Vallecorsa, E. Kajomovitz, S. Tarboush, Technion  
*Search for long lived charged particles with the ATLAS detector in pp collisions at  $\sqrt{s}=7\text{TeV}$*   
**\*Recipient of the 2010 IPS Fraenkel Prize for a graduate student in Particle Physics, Nuclear Physics, and Astrophysics**
- 16:00-16:15 **Oram Gedalia**, Alejandro Jenkins, Gilad Perez, Weizmann Institute of Science & Florida State University  
*Why do we observe a weak force? The hierarchy problem in the multiverse*
- 16:15-16:30 **Dmitry Milstein**, Ehud Duchovni, Ohad Mamroud, Weizmann Institute  
*Observation of the high  $PT$   $\phi$  mesons inside jets in the early LHC data with the ATLAS detector*
- 16:30-17:45 **Yaakov Neiman**, Christopher Eling, Yaron Oz, SISSA and INFN Trieste, & Tel Aviv University  
*Holographic Non-Abelian Charged Hydrodynamics from the Dynamics of Null Horizons*
- 16:45-17:00 **Yonathan Munwes**, Nir Amram, Gideon Bella, Yan Benhammeou, Meny Ben Moshe, Ehud Duchovni, Erez Etzion, Alon Hershenhorn, Amit Klier, Nachman Lupo, Giora Mikenberg, Dmitry Milstein, Meir Shoa, Vladimir Smakhtin, Tel Aviv University, Weizmann Institute, and Technion  
*Large scale Thin Gap Chambers for the super LHC*
- 17:00-17:15 **Guy Gur-Ari**, Ofer Aharony, Weizmann Institute of Science  
*Large-Field Inflation from Brane Monodromy*



## B2: Astronomy and Astrophysics II

Chair: Avishai Dekel

Place: Dach (5)

- 15:45-16:10 **Avishay Gal-Yam\***, Weizmann Institute  
*The fate of the most massive stars*  
**\*Co-Recipient, with Ehud Nakar, of the 2010 IPS Prize for a Young Physicist**
- 16:10-16:35 **Noam Soker**, Technion  
*A unified feedback mechanism with jets*
- 16:35-16:48 **Omer Bromberg**, Ehud Nakar, Tsvi Piran, Re'em Sari  
 The Hebrew University and Tel Aviv University  
*Analytic Modeling of the Propagation of Jets Inside Collapsars*
- 16:48-17:01 **David Wanderman**, Hebrew University of Jerusalem  
*The luminosity function and the rate of Swift's Gamma Ray Bursts*
- 17:01-17:14 **Allona Vazan**, Attay Kovetz, Morris Podolak, Tel Aviv University  
*The Effect of Opacity on the Evolution of Giant Planets*

## B3: Quantum Dots and Wires

Chair: Yuval Gefen

Place: Lev (9)

- 15:45-16:00 **Oded Zilberberg**, Alessandro Romito, Yuval Gefen, Weizmann Institute, Universitaet Karlsruhe, and Freie Universitaet Berlin  
*Charge sensing amplification via weak values measurement*
- 16:00-16:15 **N. Gabdank**, E. Rothstein, O. Entin-Wohlman, A. Aharony  
 Ben Gurion University and Tel Aviv University  
*The noise spectrum of an interacting multi-level quantum dot*
- 16:15-16:30 **Vadim Puller**, Yigal Meir, Department of Physics and Ilze Katz Center for Nano-scale Science and Technology Ben-Gurion University  
*How to Measure the Transmission Phase via a Quantum Dot in a Two-Terminal Interferometer*
- 16:30-16:45 **Oktay Goektas**, Emil Weisz, Moty Heiblum, Vladimir Umansky, Diana Mahalu, Condensed Matter Physics, Weizmann Institute of Science  
*Transmission phase of a quantum dot under high magnetic field*
- 16:45-17:15 **Yuval Oreg**, Weizmann Institute of Science  
*What are Majorana Fermions and where to find them?*

## B4: Superconductivity and Magnetism II

Chair: Guy Deutscher

Place: Holzblatt (7)

- 15:45-16:00 **Daniel Golubchik**, Emil Polturak, Gad Koren, Technion  
*Experimental determination of the mass of a vortex in a superconducting film*
- 16:00-16:15 **Gil Drachuck**, Amit Keren, Meny Shay, Galina Bazalicki  
Technion and Ort Braude College  
*2D Superconductivity in LSCO*
- 16:15-16:30 **Ilya Sochnikov**, Avner Shaulov, Yosef Yeshurun, Gennady Logvenov, Ivan Božović, Bar-Ilan University and Brookhaven National Laboratory  
*Large oscillations of the magnetoresistance in nano-patterned high-temperature superconducting films*
- 16:30-16:45 **Jorge Berger**, ORT-Braude College  
*Multiple fluxoid transitions in mesoscopic superconducting rings*
- 16:45-17:00 **Eyal Dvash**, Boris Shapiro, Bar Ilan University  
*Instability of standing flux-antiflux front in layered type-II superconductors*
- 17:00-17:15 **N. Shapira**, O. M. Auslaender, Lan Luan, K. A. Moler, B. J. Ramshaw, D. A. Bonn, Ruixing Liang, W. N. Hardy, Technion, Stanford University, and University of British Columbia  
*The Behavior of Individual Vortices on Twin Boundaries in Underdoped Single Crystal YBCO*

## B5: The Quantum Hall Effect

Chair: Moty Heiblum

Place: Shenkar 104

- 15:45-16:00 **Yaron Gross**, Merav Dolev, M. Heiblum, V. Umansky, D. Mahalu  
Condensed Matter Physics, Weizmann Institute of Science  
*Observation of neutral modes in the fractional quantum Hall regime at the first excited Landau level*
- 16:00-16:15 **Hiroyuki Inoue**, Nissim Ofek, Moty Heiblum, Vladimir Umansky, Diana Mahalu, Condensed Matter Physics, Weizmann Institute of Science  
*Neutral edge modes in the integer quantum Hall regime*
- 16:15-16:30 **Victoria Mazo**, Efrat Shimshoni, Herb A. Fertig, Bar Ilan University and Indiana University, Bloomington  
*Quantum Hall Edge States in Bilayer Graphene Ribbons*
- 16:30-16:45 **Roi Levy**, Yigal Meir, Ben Gurion University  
*Quantum Hall Insulator phase*
- 16:45-17:00 **Edouard B. Sonin**, Racah Institute of Physics, Hebrew University  
*Quantum spin Hall effect in topological insulators*
- 17:00-17:15 **Victor Kagalovsky**, Sami Shamoon College of Engineering  
*Levitation of delocalized states at weak magnetic field*

## B6: Quantum Optics

Chair: Hagai Eisenberg

Place: Ornstein 103

- 16:00-16:15 **Yael Benny**, Stanislav Khatsevich, Yaron Kodriano, Eilon Poem, Ruslan Presman, Dimitri Galushko, Pierre. M. Petroff, David Gershoni  
Technion and University of California Santa Barbara  
*Coherent optical writing and reading of the exciton spin state in single quantum dots*
- 16:30-16:45 **Serge Rosenblum**, Itay Shomroni, Barak Dayan, Weizmann Institute  
*A fundamental limit for single photon routers*
- 16:45-17:00 **Assaf Halevy**, Eli Megidish, Tomer Shacham, Liat Dovrat, Michael Bakstein, Hagai S. Eisenberg, The Hebrew University of Jerusalem  
*Projection of two biphoton qutrits onto a maximally entangled state*
- 17:00-17:15 **M. Ya. Amusia**, The Hebrew University and Ioffe Physico-Technical Institute  
*Big consequences of small changes (Non-locality and non-linearity of Hartree-Fock equations)*
- 16:15-16:30 **Hadas Soifer**, Dror Shafir, Barry D. Bruner, Yann Mairesse, Misha Yu. Ivanov, Olga Smirnova, Nirit Dudovich, Weizmann Institute, Université Bordeaux I, Imperial College London, and Max-Born Institute for Nonlinear Optics and Short Pulse Spectroscopy  
*When does an electron exit a tunneling barrier?*
- 15:45-16:00 **Eilon Poem**,\* Yaron Kodriano, Chene Tradonsky, David Gershoni, Netanel H. Lindner, Brian D. Gerardot, Pierre M. Petroff, Technion, California Institute of Technology, Heriot-Watt University, UC Santa Barbara  
*Accessing the dark exciton with light*  
**\*Recipient of the 2010 IPS Prize for a Graduate Student in Experimental Physics**

## B7: Atomic Physics

Chair: Nir Davidson

Place: Ornstein 111

- 15:45-16:00 **Hidetsugu Sakaguchi**, Boris Malomed, Kyushu University, and Tel Aviv University  
*Suppression of the quantum-mechanical collapse by repulsive interactions in a quantum gas*
- 16:00-16:15 **S. Machluf**, J. Coslovsky, P. G. Petrov, Y. Japha, R. Folman  
Department of Physics, Ben-Gurion University  
*Coupling between internal spin dynamics and external degrees of freedom in the presence of colored noise*
- 16:15-16:30 **Yoav Sagi**, Ido Almog, Rami Pugatch, Nir Davidson  
Physics of Complex Systems, Weizmann Institute of Science  
*Spectral narrowing and dynamical decoupling in a dense ensemble of optically trapped atoms*

- 16:30-16:45 **David Shwa**, Evgeny Shtravasser, Yoni Shalibo, Nadav Katz  
The Racah Institute of physics, The Hebrew University  
*The effect of electromagnetically induced transparency on an array of optical vortices*
- 16:45-17:00 **Lev Khaykovich**, Noam Gross, Zav Shotan, Olga Machtey, Servaas Kokkelmans, Bar-Ilan University and Eindhoven University of Technology  
*Study of Efimov physics in two nuclear-spin sublevels of the same atomic system*
- 17:00-17:15 **Yinnon Glickman**, Anna Keselman, Shlomi Kotler, Nitzan Akerman, Yehonatan Dallal & Roe Ozeri, Complex Systems, Weizmann Institute  
*Quantum operations on ion qubits with a Narrow linewidth diode laser*

## B8: Biophysics

Chair: Yuval Garini

Place: Shenkar 204

- 15:45 - 16:10 **Amit Meller**, Department of Biomedical Engineering, Technion  
*The physics of electrophoretic DNA capture and DNA translocation by nanoscopic pores*
- 16:15 - 16:30 **Naomi Oppenheimer**, Haim Diamant, Tel Aviv University  
*Dynamics in a membrane with immobile inclusions*
- 16:30 - 16:45 **Efrat Greenwald**, Jeffery M. Gordon, Yair Zarmi, Department of Solar Energy and Environmental Physics, Ben-Gurion University  
*Algae biomass production - where physics and biology cooperate*
- 16:45 - 17:00 **Adiel Loinger**, Eitan Rotem, Nathalie Q. Balaban, Ofer Biham  
Racah Institute of Physics, The Hebrew University  
*Quantitative analysis of a toxin-antitoxin module*
- 17:00 - 17:15 **Roy Beck**, Tel-Aviv University and University of California, Santa Barbara  
*An Unconventional Salt-Switch from Soft to Stiff in Single Neurofilament Biopolymers*

## B9: Statistical Physics

Chair: David Mukamel

Place: Shnekar 222

- 15:45-15:57 **Ofer Biham**, Baruch Barzel, Hebrew University and Northeastern University  
*Equation-Based Analysis of Complex Stochastic Reaction Networks*
- 15:57-16:09 **Shai Carmi**, Lior Turgeman, Eli Barkai, Bar-Ilan University  
*On distributions of functionals of anomalous diffusion paths*
- 16:09-16:21 **Shlomi Reuveni**, Rony Granek, Joseph Klafter  
Tel-Aviv University and Ben-Gurion University  
*A Vibrational Shortcut to the Mean First Passage Time*

- 16:21-16:33 **Guy Bunin**, Luca D'Alessio, Yariv Kafri, Anatoli Polkovnikov  
Technion and Boston University  
*Changing an isolated system's energy using non-equilibrium perturbations*
- 16:33-16:45 **Or Cohen**, Adina Lederhendler, David Mukamel  
Department of Physics of Complex Systems, Weizmann Institute of Science  
*Equilibrium long-range features in a local driven model*
- 16:45-16:57 **Stas Burov\***, David A. Kessler, Bar Ilan University  
*Non-Universal Extinction Transition for Boundary Active Site*  
**\*Recipient of the 2010 IPS Prize for a Graduate Student in Theoretical Physics**
- 16:57-17:09 **Efrat Seri**, Yosi Maruvka, Nadav Shnerb, Bar Ilan University  
*Patch size statistics and the neutral theory of biodiversity*

## B10: Applied Physics

Chair: Yossi Paltiel

Place: Kaplun 118

- 15:45-16:00 **S. Israeli**, A. Katzir, School of Physics & Astronomy, Tel Aviv University  
*Optical scattering and absorption in silver halide crystals and fibers in the middle infrared*
- 16:00-16:15 **Liron Stern**, Uriel Levy, Applied Physics, The Hebrew University  
*Slow and Fast Light in Alkali Vapor embedded in an Optical Resonator*
- 16:15-16:30 **Oren Shaya**, Hila Einati, Nikolay Fishelson, Yosi Shacham-Diamand, Yossi Rosenwaks, School of Electrical Engineering, Tel Aviv University  
*The Effect of Polar Monolayers on Molecular Gated Transistors*
- 16:30-16:45 **Nitzan Livneh**, Ilai Schwarz, Itamar Rosenberg, Ayelet Strauss, Yossi Paltiel, Adiel Zimran, Uri Banin, Ronen Rapaport, Dept. of Applied Physics, Racah Institute of Physics & Institute of Chemistry, The Hebrew University  
*Directional emission from single nanocrystal quantum dots in Subwavelength metallic nanoslit arrays*
- 16:45-17:00 **Stav Zaitsev**, Ashok K. Pandey, Oleg Shtempluck, Eyal Buks  
Department of Electrical Engineering, Technion  
*Nonlinear dynamics of a microelectromechanical mirror in an optical resonance cavity*
- 17:00-17:15 **Amit Nahor**, Oren Berger, Yoseph Bar-David, Gil Toker, Micha Asscher, Shlomo Yitzchaik, Amir Sa'ar, Racah Institute of Physics, The Chemistry Institute, and Center for Nanoscience & Nanotechnology, Hebrew University  
*Hybrid Structures of Porous Silicon and Conjugated Polymers for Photovoltaic Applications*

## B11: Plasma Physics

Chair: Avraham Gover

Place: Ornstein 110

- 15:45-16:05 **Amichay Perry**, Dan Berkovits, Ilan Eliyahu, Isaac Gertz, Asher Grin, Shlomi Halfon, Geoff Lempert, Israel Mardor, Ami Nagler, Jacob Rodnizki, Leonid Weissman, Kai Dunkel, Michael Pekeler, Christian Piel, Peter vom Stein, Alexander Bechtold, Soreq Nuclear Research Center, RI Research Instruments GmbH and NTG, Gelnhausen, Germany  
*Status Report on the SARAF Accelerator Project Phase I*
- 16:05-16:19 **Shurik Yatom**, Vlad Vekselman, Joseph Gleizer, Technion  
*Investigation of high pressured gas discharge in nanosecond time scale*
- 16:19-16:33 **E. Schleifer**, N. Bruner, T. Palchan, S. Eisenmann, M. Botton, A. Zigler  
Hebrew University Jerusalem, Israel  
*Generation of Multi-MeV protons by interaction of modest laser intensities with H<sub>2</sub>O "snow" nano-wire targets*
- 16:33-16:47 **Yiftach Katzir**, Racah Institute of Physics, Hebrew University  
*A Plasma Micro-Lens and Corrugated Capillary for Ultra Short High Power Lasers*
- 16:47-17:01 **Yu. Lurie**, Y. Pinhasi, Ariel University Center  
*Wide-band simulations of a pulsed-driven THz FEL*
- 17:01-17:15 **D. Dubrovin**, S. Nijdam, E.M. Van Veldhuizen, Ute Ebert, Yoav Yair, Colin Price, Tel Aviv University, Eindhoven University of Technology, Centrum Wiskunde & Informatica, Amsterdam, and The Open University of Israel  
*Sprite discharges on Venus, Jupiter and Saturn: a Laboratory Investigation in Planetary Gas Mixtures*



## Posters

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### Categories:

<b>PA</b> – High Energy Physics	<b>PI</b> – Soft Matter and Chemical Physics
<b>PB</b> – Astronomy and Astrophysics	<b>PJ</b> – Statistical Physics
<b>PC</b> – Geophysics and Planetary Science	<b>PK</b> – Nonlinear Physics
<b>PD</b> – Mesoscopic Physics and Nanosystems	<b>PL</b> – Material Physics
<b>PE</b> – Superconductivity and Magnetism	<b>PM</b> – Applied Physics
<b>PF</b> – Solid State Physics	<b>PN</b> – Plasma Physics
<b>PG</b> – Atomic, Molecular and Optical Physics	<b>PO</b> – Physics Education
<b>PH</b> – Biophysics	

- PA-01 **Motti Bitton**, Tel Aviv University  
*Feynman diagrams: Do we really need all of that?*
- PA-02 **Amit Dekel**, Tel Aviv University  
*Self-Duality of Integrable Green-Schwarz Sigma-Models*
- PA-03 **Yochay Eshel**, Gilad Perez, Yotam Soreq, Weizmann Institute of Science  
*Radion Mass in Stabilization Mechanisms of Warped Extra Dimension*
- PA-04 **Ishay Pomerantz**, Eli Piasetzky, Tel Aviv University  
*Two-Body Hard Photodisintegration of  $^3\text{He}$  to  $p-d$*
- PA-05 **Konstantin Shougaev**, Abner Soffer, Tel Aviv University  
 *$D0 \rightarrow V l^+ l^-$  rare charm decay sensitivity estimation at SuperB Factory experiment*
- PA-06 **Amir Stern**, Tel Aviv University  
*Measurement of the energy dependence of the total photon-proton cross section at HERA*
- PA-07 **Nimrod Taiblum**, Tel Aviv University  
*Search for New Long-Lived Particles at the LHC*
- PA-08 **Asher Yahalom**, Ariel University Center of Samaria  
*The Gravitational Origin of the Distinction between Space and Time*
- PB-09 **Iair Arcavi**, Weizmann Institute of Science  
*Supernovae in Dwarf Galaxies Help Probe the Evolution of Massive Stars*
- PB-10 **Paz Beniamini**, Dafne Guetta, Ehud Nakar, Tsvi Piran  
Hebrew University, Tel Aviv University, and Osservatorio Astronomico di Roma  
*Detecting the HE emission of LGRBs*
- PB-11 **Franck Genet**, Tsvi Piran, Uri Jacob, The Hebrew University of Jerusalem  
*Is Gamma-Ray Bursts prompt emission from external inverse-Compton?*
- PB-12 **Loren Hoffman**, Hebrew University of Jerusalem  
*Kinematic signatures of galaxy formation*

- PB-13 **Amit Kashi**, Noam Soker, Physics Department, Technion  
*The Powering Mechanism of Intermediate Luminosity Optical Transients and Luminous Blue Variables*
- PB-14 **Amit Levi**, Morris Podolak  
Tel Aviv University the Department of Geophysics and Planetary Science  
*Gas and Dust Transient Atmospheres Surrounding Intermediate Sized KBOs*
- PB-15 **David Polishook**, Dina Prialnik, Eric Rosenberg, Noah Brosch  
Weizmann Institute, Tel Aviv University, JPL/Caltech  
*Parameter-study of the Yarkovsky effect: The contribution of the rotation period*
- PB-16 **Asher Yahalom**, Jacob Levitan, Meir Lewkowicz, Larry Horwitz  
Ariel University Center of Samaria, Bar-Ilan University, Tel-Aviv University  
*Lyapunov vs. Geometrical Stability Analysis of Circular and Real eccentricity Kepler Orbits*
- PC-17 **Pavel Kishcha**, Boris Starobinets, Pinhas Alpert, Tel-Aviv University  
*Variations of Meridional Aerosol Distribution and Solar Dimming*
- PD-18 **Yoav Etzioni**, Baruch Horovitz, Pierre Le Doussal  
Ben Gurion University, Ecole Normale Superieure, France  
*Rings and boxes with dissipative environments*
- PD-19 **Chia-Wei Huang**, Massoud Borhani, Xuedong Hu  
Bar-Ilan University and University at Buffalo SUNY  
*Two-electron spin relaxation in a double quantum dot*
- PD-20 **D. Rakhmilevich**, M. Ben Shalom, M. Eshkol, M. Tsukernik, M. Karpovski, Y. Dagan, A. Palevski, School of Physics and Astronomy, Tel Aviv University  
*Phase Coherent transport in  $LaAlO_3/SrTiO_3$  interface*
- PD-21 **Eial Teomy**, Amnon Aharony, Ora Entin-Wohlman  
Tel Aviv University and Ben Gurion University  
*Rashba spin-orbit interaction in a two-dimensional ring subject to a magnetic field*
- PE-22 **Eran Amit**, Amit Keren, Technion  
*Precise Measurement of the Oxygen Isotope Effect on the Ne'el temperature*
- PE-23 **Yeshayahu Atzmon**, Efrat Shimshoni, Bar-Ilan University  
*Superconductor-Insulator Magneto-Oscillations in Superconducting Strips*
- PE-24 **Gil Bachar**, Oren Suchoi, Oleg Shtempluck, Eyal Buks, Technion  
*Nonlinear phenomena in superconducting  $YBaCuO$  microwave resonators*
- PE-25 **Y. Hammer**, R. G. Mints, Tel Aviv University  
*Critical current at a surface of a layered superconductor*
- PE-26 **Ze'ev Lindenfeld**, Eli Eisenberg, Ron Lifshitz, Tel Aviv University  
*On the Possibility of Electron Pairing in Small Metallic Nanoparticles*
- PE-27 **Ronen Magier**, David J. Bergman, Tel Aviv University  
*Strong-field magnetotransport of a normal conductor-superconductor-insulator disordered composite material—Simulations on a discrete model*
- PE-28 **Muntaser Naamnieh**, Amit Kanigel, Technion  
*Doping dependence of the de-pining current in  $Bi_2Sr_2CaCu_2O_{8+\delta}$*

- PE-29 **A. Segal**, M. Karpovski, A. Gerber, Tel Aviv University  
*Inhomogeneity and transverse voltage in superconductors*
- PF-30 **Miron Amusia**, Vasiliy Shaginyan  
Hebrew University and Petersburg Nuclear Physics Institute, RAS, Gatchina  
*Quasiparticles of strongly correlated Fermi liquids at high temperatures and in high magnetic fields*
- PF-31 **Shelomo I. Ben-Abraham**, Alexander Quandt  
Ben-Gurion University and University of the Witwatersrand, South Africa  
*Aperiodic structures and notions of order and disorder*
- PF-32 **M. Chuchem**, K. Smith-Mannschott, M. Hiller, T. Kottos, A. Vardi, D. Cohen,  
Ben-Gurion University, Wesleyan University, Middletown, MPI for Dynamics  
and Self-Organization, Göttingen, Albert-Ludwigs-Universiteit, Freiburg, and  
ITAMP, Harvard-Smithsonian  
*Semiclassical analysis of quantum dynamics in the bosonic Josephson junction*
- PF-33 **Israel Cohen**, David J. Bergman, Tel Aviv University  
*Optical transmission through metal films with a subwavelength hole array in the presence of a magnetic field*
- PF-34 **Kobi Cohen**, Ronen Rapaport, The Hebrew University of Jerusalem  
*Trapping, Flow Control, and Objective Density Calibration of Dipolar Exciton Fluids Using Remote Interactions*
- PF-35 **Yuriy Gofman**, Jerusalem College of Technology  
*The formation of unstable Frenkel pairs in irradiated materials by charged particles*
- PF-36 **S. Lerer**, M. Ben-Shalom, Y. Dagan, Tel Aviv University  
*Evidence for multiple types of charge carriers at the conducting interface formed between SrTiO<sub>3</sub> and LaAlO<sub>3</sub> from thermal transport measurements*
- PF-37 **Zohar Ringel**, Yaacov E. Kraus, Weizmann Institute of Science  
*Determining topological order from a local ground state correlation function*
- PF-38 **Jonathan Ruhman**, Emanuele G. Dalla-Torre, Ehud Altman,  
Department of Condensed Matter Physics, Weizmann Institute of Science  
*Non-Local Order in Elongated Dipolar Gases*
- PF-39 **Ofer Shlagman**, Efrat Shimshoni, Bar Ilan University  
*Magneto thermal transport in spin-ladder systems coupled to phonons*
- PG-40 **Itai Afek**, Yonatan Israel, Oron Ambar, Tsvika Shapia, Hila Sheftel, Yaron Silberberg, Department of Physics of Complex Systems, Weizmann Institute  
*High-NOON States by Mixing Quantum and Classical Light*
- PG-41 **Miron Ya. Amusia**, Larissa V Chernysheva, Evgeniy Z Liverts  
The Hebrew University and Ioffe Physical-Technical Institute, St.-Petersburg  
*Non-dipole effects in angular distributions of secondary electrons in fast particle-atom scattering*

- PG-42 **Miron Ya. Amusia**, Larissa V Chernysheva, Evgeniy Z Liverts  
Hebrew University and A. F. Ioffe Physical-Technical Institute, St. Petersburg  
*Photoionization of Onion-type atoms*
- PG-43 **Igal Balin**, Nir Dahan, Vladimir Kleiner, Erez Hasman, Technion  
*Bandgap Structure of Thermally Excited Surface Phonon Polaritons*
- PG-44 **Dipankar Bhattacharyya**, Rami Pugatch, Ariel Amir, Yoav Sagi, Nir Davidson  
Department of Physics of Complex System, Weizmann Institute of Science  
*Hearing the diffusion modes by using Electromagnetically Induced Transparency (EIT)*
- PG-45 **Robert Englman**, Asher Yahalom,  
Soreq NRC and Ariel University Center of Samaria  
*Distributed Phase Acquisition in a Wave Function*
- PG-46 **H. Landa**, S. Marcovitch, A. Retzker, M. B. Plenio, B. Reznik  
Tel Aviv University, Imperial College London, and Universitaet Ulm  
*Putting a Soliton into Quantum Superposition*
- PG-47 **Ilai Schwarz**, Nitzan Livneh, Ronen Rapaport, The Hebrew University  
*A simple unified analytical model for extraordinary transmission in subwavelength metallic gratings*
- PG-48 **Michael Volodarsky**, Ido Dolev, Yonatan Sivan, Tal Ellenbogen, Ady Arie  
Tel Aviv University, Imperial College London, and Harvard University  
*Frequency conversion of surface plasmon-polaritons at a boundary of nonlinear dielectric and metal*
- PG-49 **Shai Yefet**, Na'aman Amer, Avi Pe'er, Bar-Ilan University  
*A novel Femtosecond Mode-Locked Laser with Flexible Control of the Emitted Spectrum*
- PH-50 **Amir Bashan**, Ronny P. Bartsch, Jan W. Kantelhardt, Shlomo Havlin, Plamen Ch. Ivanov, Bar Ilan University, Harvard Medical School and Division of Sleep Medicine, Brigham and Womens Hospital, Martin-Luther Universitaet Halle-Wittenberg, Boston University  
*Dynamical Networks of Integrated Physiological Systems: Network Transition Across Physiologic States*
- PH-51 **Evgeniya Levy**, Alexander Puzenko, Andrey Shendrik, Ido Segev, Mark Talary, Andreas Caduff, Yuri Feldman,  
The Hebrew University of Jerusalem and 2Solianis Monitoring AG, Zürich  
*Dielectric Relaxation in ATP and AMP aqueous solutions*
- PH-52 **Moshe Lindner**, Guy Nir, Shlomi Medalion, Yitzhak Rabin, Yuval Garini  
Department of Physics & Institute for Nanotechnology, Bar Ilan University  
*3D Distribution Of Tethered DNA Measured Using Gold Nano-Beads*

- PH-53 **Guy Nir**, Moshe Lindner, Olga Girshevitz, Heidelinde R. C. Dietrich, Constantinos E. Vorgias, Yuval Garini, Bar Ilan University, Delft University of Technology, and National and Kapodistrian University of Athens  
*HU protein induces incoherent DNA persistence length*
- PH-54 **Irit Levin-Reisman**, Orit Gefen, Ofer Fridaman, Irine Ronin, David Shwa, Sheftel Hila, Nathalie Q Balaban, Hebrew University Jerusalem  
*Automated imaging with ScanLag reveals previously undetectable bacterial growth phenotypes*
- PH-55 **Eitan Rotem**, Adiel Loinger, Irine Ronin, Irit Levin-Reisman, Chana Gabay, Noam Shoresh, Ofer Biham, Nathalie Q. Balaban  
Hebrew University, Jerusalem and Broad Institute of Harvard and MIT,  
*Noise Amplification Breaks the Symmetry in Living Cells*
- PI-56 **Avner Cohen**, Erez Janai, Eli Sloutskin, Bar-Ilan University  
*Fluid suspensions of colloidal ellipsoids: direct structural measurements*
- PI-57 **Eli Flaxer**, AFEKA – Tel Aviv Academic College of Engineering  
*Programmable Smart Electron Emission Controller for Supersonic Gas Chromatography Mass Spectrometry*
- PI-58 **Xingkun Man**, David Andelman, Henri Orland  
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## Notes

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## Notes

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## Program at a Glance

08:00 – 09:00	<b>Registration and Coffee</b>			<i>Bar-Shira</i>
09:00 – 09:30	<i>Opening</i>	<i>Prof. Ron Lifshitz (Chair, IPS2010)</i>		<i>Bar-Shira</i>
	<i>Welcome</i>	<i>Prof. Joseph Klafter (President, TAU)</i>		
	<i>Welcome</i>	<i>Prof. Yaron Oz (Chair, TAU School of Physics &amp; Astronomy)</i>		
	<i>Greetings &amp; IPS Prizes</i>	<i>Prof. Avishai Dekel (President, Israel Physical Society)</i>		
09:30 – 10:30	<i>Plenary Lecture: M. Zahid Hasan, Princeton University</i> <b>Bulk Topological Insulators and Superconductors: Discovery and the Frontier</b>			<i>Bar-Shira</i>
10:30 – 11:00	<b>Coffee Break</b>			<i>Bar-Shira</i>
11:00 – 12:00	<b>Review R1 (Room 9)</b> Solid State & Quantum Physics <i>Chair: Amnon Aharony</i> <i>Yaron Silberberg (WIS)</i>	<b>Review R2 (Room 5)</b> Soft Condensed Matter <i>Chair: David Andelman</i> <i>Stefano Ruffo (Firenze)</i>	<b>Review R3 (Room 6)</b> High energy & Astrophysics <i>Chair: Yaron Oz</i> <i>Dan Maoz (TAU)</i>	<i>Exact Sciences</i>
	<b>An Easy Road to High-Noon: The Photonic Schrodinger Cat</b> <i>D. Goldhaber-Gordon (Stanford)</i>	<b>Dynamics of systems with long-range interactions</b> <i>Eran Sharon (HUJI)</i>	<b>Type-Ia Supernovae: How we learned to love the bomb ...</b> <i>Gilad Perez (WIS)</i>	
	<b>Coherence and Interactions in an Open Quantum Dot</b>	<b>Shaping via Active Deformation of Elastic Sheets</b>	<b>Top Physics in the Large Hadron Collider (LHC) Era</b>	
12:00 – 14:00	<b>Poster Session &amp; Trade Fair with a Light Lunch</b>			
14:00 – 15:30	<b>Parallel Sessions A</b>	A1. High energy physics Melamed auditorium (6)	A2. Astronomy & Astrophysics I Dach auditorium (5)	<i>Exact Sciences</i>
	A3. Mesoscopic phys. & nanosystems Lev auditorium (9)	A4. Superconductivity & magnetism I Holzblat auditorium (7)	A5. Solid state physics Shenkar-Physics 104	
	A6. Classical optics Ornstein 103	A7. Quantum information Ornstein 111	A8. Soft matter physics Shenkar-Physics 204	
	A9. Nonlinear physics Shenkar-Physics 222	A10. Material physics Kaplun 118	A11. Physics education Ornstein 110	
15:30 – 15:45	<b>Short Break</b>			
15:45 – 17:15	<b>Parallel Sessions B</b>	B1. High energy physics (cont.) Melamed auditorium (6)	B2. Astronomy & Astrophysics II Dach auditorium (5)	<i>Exact Sciences</i>
	B3. Quantum dots & wires Lev auditorium (9)	B4. Superconductivity & magnetism II Holzblat auditorium (7)	B5. The Quantum Hall effect Shenkar-Physics 104	
	B6. Quantum optics Ornstein 103	B7. Atomic physics Ornstein 111	B8. Biophysics Shenkar-Physics 204	
	B9. Statistical physics Shenkar-Physics 222	B10. Applied physics Kaplun 118	B11. Plasma physics Ornstein 110	
17:15 – 17:45	<b>Coffee Break</b>			<i>Bar-Shira</i>
17:45 – 18:00	<i>Award Ceremony – Best Student Posters</i>			<i>Bar-Shira</i>
18:00 – 19:00	<i>Plenary Lecture: Douglas D. Osheroff, Stanford University (Chair: Yoseph Imry)</i> <b>The Story Behind the Discovery of Superfluidity in <sup>3</sup>He</b>			<i>Bar-Shira</i>