BGU-QST **Ben Gurion University of the Negev**

The Second Conference for Young Researchers in Quantum Science and Technology

October 30, 2019

Program

9:00-9:30	Registration
Session I Chair: Alina Karabchevsky	
9:30-9:35	**Welcome: Prof. Angel Porgador,** Deputy Vice-President and Dean for R&D
9:35-9:40	**Welcome: Prof. Avi Levy,** Dean, Faculty of Engineering
9:45-9:50	**Welcome: Prof. Michal Shapira**, Dean, Faculty of Natural Sciences
9:50:9:55	**Director's welcome: Shlomi Arnon**
9:55-10:35 – Guest speaker	**Keynote speaker: Joseph Zyss**, Paris Saclay University and CNRS-Weizmann Joint Lab *Microbilliard lasers, a classical analog to quantum systems*
10:35-10:45	Omri Lesser, Eran Sagi and Yuval Oreg, WIS *Universal phase diagram of topological superconductors subjected to magnetic flux*
10:45-10:55	Noa Feldman, Moshe Goldstein, TAU *Dynamics of Charge-Resolved Entanglement after a Local Quench*
10:55-11:05	Yin Ruoyu, BIU *Large fluctuations of the first detected quantum return time*
11:05-11:15	Angeleene S. Ang, Yonathan Japha, Mark Keil, David Groswasser, Alexander S. Shalin, Alina Karabchevsky *Tailored optical potentials for Cs atoms above waveguides with focusing dielectric nano-antenna*
11:15-11:30	Dror Liran, Itamar Rosenberg, Timothy Chou, Kenneth West, Loren Pfeiffer, and Ronen Rapaport, HUJI *Guided Dipolar Exciton Polaritons*
Coffee break	
Session II Chair: Moshe Schechter	
11:45-12:15 – Guest speaker	**Keynote speaker: Avi Peer,** Bar Ilan University *Ultra-broadband quantum optical measurement : harnessing the optical bandwidth resource to quantum information applications*
12:15-12:25	Bar Y. Peled, Amit Te'eni, Eliahu Cohen, Avishy Carmi, BGU *Multiplicative Bell Inequalities*
12:25-12:35	Aviram Uri, Youngwook Kim, Kousik Bagani, Cyprian K. Lewandowski, Sameer Grover, Nadav Auerbach, Ella O. Lachman , Yuri Myasoedov, Takashi Taniguchi, Kenji Watanabe, Jurgen Smet, and Eli Zeldov, WIS *Nanoscale imaging of equilibrium quantum Hall edge currents in graphene*
12:35-12:45	A. Uri, S. Grover, Y. Cao, J. A. Crosse, K. Bagani, D. Rodan-Legrain, Y. Myasoedov, K. Watanabe, T. Taniguchi, P. Moon, M. Koshino, P. Jarillo-Herrero, and E. Zeldov, WIS *Mapping the twist angle and unconventional Landau levels in magic angle*

	graphene
12:45-12:55	Nirel Bernstein, Bharat Grover, Binoy Hazra, Tianping Ma, Jae-Chun Jeon, James Taylor, Jibo Zhang, Anastasios Markou, Claudia Felser, Stuart Parkin and Amir Capua, HUJI
	Large spin Hall effect in sputtered thin films of non-collinear Mn3Sn antiferromagnet
12:55-13:05	Mohammad Sulieman, Yachin Ivry, TECHNION
	Flexible, foldable, transferrable superconducting and quantum devices
13:05-13:15	Amit Behera, Or Sattath, BGU
	Almost public quantum coins
13:25-14:00 - Lunch	**Lunch break and poster session**
Session III Chair: Dganit Meidan	
14:00-14:30 – Guest speaker	**Keynote speaker: Alex Retzker,** Hebrew University of Jerusalem
	Overcoming resolution limits with quantum sensing
14:30-14:40	Sayak Ray, Doron Cohen, Amichay Vardi, BGU
	Chaos induced breakdown of Bose-Hubbard modeling
14:40-14:50	Dan Klein, Karen Michaeli, WIS
	Spin filtering in chiral organic molecules – the role of electron-phonon interactions
14:50-15:00	Noam Brown, Amit K. Mondal, Pandeeswar Makam, Dahvyd Wing, Yarden Wiesenfeld, Linda J. W. Shimon, Leeor Kronik, Oded Hod, Ron Naaman and Ehud Gazit, TAU
	Long-Range Spin-Dependent Conduction in Bioinspired Organometallic Crystals
15:00-15:10	Or Dobkowski, Yair Margalit, Zhifan Zhou, Omer Amit, Yonathan Japha, Daniel Rohrlich, Samuel Moukouri, and Ron Folman, BGU
	Realization of a complete Stern-Gerlach interferometer
15:10-15:20	A. Marguerite, J. Birkbeck, A. Aharon-Steinberg, D. Halbertal, K. Bagani1, I. Marcus, Y. Myasoedov, A. K. Geim, D. J. Perello, and E. Zeldov, WIS
	Imaging the work, dissipation and topological protection in the quantum Hall state
15:20-15:30	Rajnish Kumar, S. Arnon, BGU
	Photon counting in medical diagnostics
Coffee break	
Session IV Chair: Avishy Carmi	
15:45-15:55	Dor Bitan, Shlomi Dolev, BGU
	Randomly Rotate Qubits Compute and Reverse --- IT-Secure Non-Interactive Fully-Compact Homomorphic Quantum Computations over Classical Data Using Random Bases
15:55-16:05	Yahel Horowicz, Or Katz, Oren Raz, Ofer Firstenberg, WIS
	Non-equilibrium phase transition of alkali vapor
16:05-16:15	Ohad Lib, Giora Hasson, Yaron Bromberg, HUJI
	Generating entangled photons with tailored
	correlations for real-time quantum wavefront shaping
16:15-16:25	Srinivas Pachava, B. Srinivasan, BGU and IIT Madras

	Modal decomposition of Laguerre Gaussian beams with different radial orders using optical correlation technique
16:25-16:55	**Keynote speaker: Ron Folman,** Ben Gurion University
	Quantum technology at the atom chip group
16:55-17:00	**Popular vote slips collected**
17:10 – 17:15	**Awards for best talk and poster, and popular vote**.
	Committee: Chair: Joseph Zyss – ENS Cachan, CNRS, Weizmann
	Alex Retzker - HUJI
	Avi Peer – Bar Ilan
	Avishy Carmi - BGU

POSTERS:

Arthur Marguerite, John Birkbeck, Amit Aharon-Steinberg, Dorri Halbertal, Kousik Bagani, Ido Marcus, Yuri Myasoedov, Andre K. Geim, David J. Perello, Eli Zeldov, WIS
Imaging work and dissipation in the quantum Hall effect in graphene.

O. Amit, Y. Margalit, O. Dobkowski, Z. Zhou, Y. Japha, M. Zimmermann,
M. A. Efremov, F. A. Narducci, E. M. Rasel, W. P. Schleich and R. Folman, BGU
T 3-Stern-Gerlach Matter-Wave Interferometer

David Groswasser , Yosef Bivas , Henry Realpe , Menachem Givon , Filippo Levi, Ron Folman, BGU
An optical frequency atomic clock: the most accurate machine ever built

A. Uri, S. Grover, Y. Cao, J. A. Crosse, K. Bagani, D. Rodan-Legrain, Y. Myasoedov, K. Watanabe, T. Taniguchi, P. Moon, M. Koshino, P. Jarillo-Herrero, and E. Zeldov, WIS
Mapping the twist angle and unconventional Landau levels in magic angle grapheme

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Spin filtering in chiral organic molecules – the role of electron-phonon interactions

Omri Lesser, Eran Sagi and Yuval Oreg, WIS
Universal phase diagram of topological superconductors subjected to magnetic flux

Ohad Lib, Yaron Bromberg, HUJI
Spatially entangled Airy photons

Yoad Michael, Leon Bello, Michael Rosenbluh, Avi Pe'er, BIU
Squeezing-enhanced Raman spectroscopy

Yechezkel Schlussel, Till Lenz, Dominik Rohner, Yaniv Bar-Haim, Lykourgos Bougas, David Groswasser, Michael Kieschnick, Evgeny Rozenberg, Lucas Thiel, Amir Waxman, Jan Meijer, Patrick Maletinsky, Dmitry Budker, Ron Folman, BGU
Widefield imaging of superconducting vortices with electron spins in diamond

Mohammad Sulieman, Yachin Ivry, TECHNION

Flexible, foldable, transferrable superconducting and quantum devices

Aviram Uri, Youngwook Kim, Kousik Bagani, Cyprian K. Lewandowski, Sameer Grover, Nadav Auerbach, Ella O. Lachman , Yuri Myasoedov, Takashi Taniguchi, Kenji Watanabe, Jurgen Smet, and Eli Zeldov, WIS

Nanoscale imaging of equilibrium quantum Hall edge currents in grapheme

Yiming Pan, Bin Zhang, Ido Kaminer, and Avraham Gover, TAU, Technion and WIS
Quantum Shaping of Free-Electron Wavefunction and its Transition from DLA to PINEM

Zhaopin Chen, Yongyao Li, Nikolaos. P. Proukakis and Boris. A. Malomed , TAU
Immiscible and miscible states in binary condensates in the ring geometry

Srinivas Pachava, B. Srinivasan, BGU and IIT Madras
Modal decomposition of Laguerre Gaussian beams with different radial orders using optical correlation technique

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