

SCHEDULE OF TALKS
Universal Themes of Bose-Einstein Condensation
Pittsburgh, April 1-5, 2019

Full abstracts available at <https://www.mrs.org/ubec-2019>

MONDAY, APRIL 1

- 8:30 AM** Breakfast
- 8:50 AM** Welcome
Arthur Kosowsky
- 8:55 AM** Opening Remarks
David Snoko
- 9:00 AM** “The Halon: A Quasiparticle Featuring Critical Charge Fractionalization”
Boris Svistunov, Kun Chen, Yuan Huang, and Youjin Deng
- 9:45 AM** “Chiral Superfluids and Superconductors”
William Halperin
- 10:30 AM** Coffee break
- 10:50 AM** “Electron Pairing Without Superconductivity”
Guanglei Cheng, Michelle Tomczyk, Shicheng Lu, Joshua P. Veazey, Mengchen Huang, Patrick Irvin, Sangwoo Ryu, Hyungwoo Lee, Chang-Beom Eom, C. Stephen Hellberg, and Jeremy Levy
- 11:10 AM** “Long-range non-difusive spin transfer in a Hall insulator”
V. A. Kuznetsov, L. V. Kulik, A. S. Zhuravlev, A. V. Gorbunov, and I. V. Kukushkin
- 11:30 AM** “Pascal-liquid phases in ballistic one-dimensional LaAlO₃/SrTiO₃ channels”
Megan Briggeman, Michelle Tomczyk, Binbin Tian, Hyungwoo Lee, Jung-Woo Lee, Yuchi He, Anthony Tylan-Tyler, Mengchen Huang, Chang-Beom Eom, David Pekker, Roger S. K. Mong, Patrick Irvin, and Jeremy Levy
- 11:50 AM** “New perspectives on quantum matter: bringing together quantum simulations and machine learning”
Eugene Demler
- 12:35 PM** Lunch

- 2:00 PM** “Quantized superfluid vortex dynamics on curved surfaces”
Alexander Fetter
- 2:45 PM** “Visualization study of quantum fluid dynamics in superfluid ^4He ”
Wei Guo
- 3:30 PM** Coffee break
- 3:50 PM** “Strongly interacting homogeneous Bose gases”
Robert Smith
- 4:35 PM** “Quantum fluids of light: from superfluidity to strong correlations”
Josè Lebreuilly
- 5:25 PM** “Natural Oscillations of a Polariton Condensate in a Ring”
S. Mukherjee, D.M. Myers, R.G. Lena, B. Ozden, J. Beaumarriage, Z. Sun,
M. Steger, L.N. Pfeiffer, K. West, A. J. Daley and D.W. Snoke

TUESDAY, APRIL 2

- 8:30 AM** Breakfast
- 9:00 AM** “Polariton quantum fluids in and out of equilibrium”
Marzena Szymanska
- 9:45 AM** “Quantum depletion of a trapped nonequilibrium exciton-polariton condensate”
M. Pieczarka, E. Estrecho, M. Boozarjmehr, M. Steger, K. West, L. Pfeiffer, D.W. Snoke, A. G. Truscott, and E.A. Ostrovskaya
- 9:55 AM** “Excitations of long-lived polariton condensates”
D. Ballarini, D. Caputo, G. Dagvadorj, K. West, L. Pfeiffer, M. Matuszewski, M. H. Szymanska, and D. Sanvitto
- 10:30 AM** Coffee break
- 10:50 AM** “Angular momentum transfer due to non-topological phase defects during the merging of rotating Bose-Einstein condensates”
Toshiaki Kanai, Wei Guo, and Makoto Tsubota
- 11:10 AM** “Dynamical phase transition crossing and relaxation of trapped quantum gases”
I. Liu, P. Comaron, G. Dagvadorj, A. Zamora, F. Larcher, S. Donadello, G. Lamporesi, G. Ferrari, S.C. Gou, I. Carusotto, M.H. Szymanska, F. Dalfovo and N.P. Proukakis
- 11:30 AM** “Long-range ordering and Onsager condensation of topological excitations in a two-dimensional superfluid far from equilibrium”
Hayder Salman and Davide Maestrini
- 11:50 AM** “Emergence of large-scale flow from turbulence in a two-dimensional superfluid”
Shaun P. Johnstone, Andrew J. Groszek, Philip T. Starkey, Christopher J. Billington, Tapio P. Simula, and Kristian Helmerson
- 12:35 PM** Lunch
- 2:00 PM** “New direction on quantum simulations with long-lived strontium dipoles in a cavity”
Ana Maria Rey
- 2:45 PM** “Light-induced azimuthal gauge potentials and spin-orbital angular-momentum coupling in Bose-Einstein condensates”
P.-K. Chen, L.-R. Liu, N.-C. Chiu, H.-R. Chen, K.-Y. Lin, M.-J. Tsai, S.-K. Yip, Y. Kawaguchi, M.-S. Chang, and Y.-J. Lin
- 3:30 PM** Coffee break

4:00 PM Poster Session

1. “Spin thermometry of individual neutral impurities coupled to a Bose-Einstein condensate,” Daniel Adam, Quentin Bouton, Tobias Lausch, Daniel Mayer, Jens Nettersheim, Felix Schmidt, and Artur Widera
2. “Optical cycling of cold barium monofluoride molecules enabled by magnetic fields,” Ralf Albrecht, Tobias Sixt, Lucas Hofer, Michael Scharwaechter and Tim Langen
3. “Impurity dynamics in bright soliton condensates,” Christopher Campbell, Matthew Edmonds, and Thomas Busch
4. “Inter-species entanglement in two-species bosons in optical lattices,” Saubhik Sarkar, Suzanne McEndoo, Dominik Schneble, and Andrew J. Daley
5. “Spin Hall effect for microcavity polaritons in the presence of superfluidity” Oleg L. Berman, Roman Ya. Kezerashvili, and Yurii E. Lozovik
6. “Dissipation-driven entanglement of quantum-dot polaritons,” Matthew Otten, Stephen K. Gray, and German V. Kolmakov
7. “Tunability of polariton superfluidity in buckled 2D materials by an external electric field,” Matthew N. Brunetti, Oleg L. Berman, and Roman Ya. Kezerashvili
8. “Translationary invariant magnetoexciton complexes,” V.A. Kuznetsov, L.V. Kulik, A.S. Zhuravlev, A.V. Gorbunov, and I.V. Kukushkin
9. “Drag Effect of a Polariton Condensate in a Quantum Wire,” D.M. Myers, B. Ozden, J. Beaumariage, M. Steger, L.N. Pfeiffer, K. West, and D. W. Snoke
10. “Locking of Multiple Polariton Condensates at High Density,” D.M. Myers, J.K. Wuenschell, B. Ozden, J. Beaumariage, L.N. Pfeiffer, K. West, and D.W. Snoke
11. “Exciton-polariton condensation in the single-shot and Thomas-Fermi regime,” E. Estrecho, T. Gao, N. Bobrovska, M. D. Fraser, M. Steger, L. Pfeiffer, K. West, T.C.H. Liew, M. Matuszewski, D. W. Snoke, A. G. Truscott, and E.A. Ostrovskaya (presented by M. Pieczarka)
12. “Evolution from a polariton-BEC to photon laser: Non-Hermitian phase transition and crossover phenomena around the exceptional point,” Ryo Hanai, Alexander Edelman, Yoji Ohashi, and Peter B. Littlewood
13. “One-Dimensional Nature of Superconductivity at the LaAlO₃/SrTiO₃ Interface,” Yun-Yi Pai, Hyungwoo Lee, Jung-Woo Lee, Anil Annadi, Guanglei Cheng, Shicheng Lu, Michelle Tomczyk, Mengchen Huang, Chang-Beom Eom, Patrick Irvin, and Jeremy Levy

14. “Uniaxial strain effect on superconductivity in $\text{LaAlO}_3/\text{SrTiO}_3$ nanostructures,” Xinyi Wu, Megan Briggeman, Joe Albro, Jianan Li, Jungwoo Lee, Hyungwoo Lee, Chang-Boem Eom, Patrick Irvin, and Jeremy Levy
15. “Chiral to helical Majorana fermion transition in a p-wave superconductor,” Haiping Hu, Indubala I. Satija, and Erhai Zhao
16. “Vortex-Induced Dissipation Across a Josephson Junction,” K. Xhani, E. Neri, M. Zaccanti, K.L. Lee, L. Galantucci, A. Trombettoni, F. Scazza, A. Burchianti, G. Roati and N.P. Proukakis
17. “Far-from-equilibrium dynamics of molecules in 4He nanodroplets: a quasiparticle perspective,” G. Bighin, I.N. Cherepanov, R. Schmidt, and M. Leshko
18. “Thermodynamics of bosons in the lowest Landau level,” Bhilahari Jeevanesan and Sergej Moroz

WEDNESDAY, APRIL 3

- 8:30 AM** Breakfast
- 9:00 AM** “Mass Transport through dislocation network in solid ^4He ”
Jaeho Shin and Moses H.W. Chan
- 9:20 AM** “Coherent Optical Manipulation of Single Electrons in Superfluid Helium-4”
Matthew Otten, Xianjing Zhou, and Dafei Jin
- 9:45 AM** “Superconductor-Insulator Transition and Fermi-Bose Crossovers”
Nandini Trivedi
- 10:30 AM** Coffee break
- 10:50 AM** “A monolayer transition metal dichalcogenides as a topological excitonic insulator”
Daniele Varsano, Maurizia Palummo, Elisa Molinari, and Massimo Rontani
- 11:10 AM** “Floquet higher-order topological insulators: Topology and comprehensive detection in optical lattices”
Biao Huang and W. Vincent Liu
- 11:30 AM** “Disordered bosons: from superfluid to Bose glass in quantum magnetic insulators and cold atomic gases”
Thierry Giamarchi
- 11:50 AM** “Bose-Einstein Condensation in Quantum Dimer Systems: Dimensionality, Transport, and Out-of-Equilibrium”
Christian Rüegg
- 12:35 PM** Lunch
- 2:00 PM** “Suppression of the exciton Bose condensate in TiSe_2Cu_x by electron doping”
Melinda Rak, Samantha Rubeck, Matteo Mitrano, Ali Husain, Anshul Kogar, Jasper van Wezel, Goran Karapetrov, Emilia Morosan, and Peter Abbamonte
- 2:45 PM** “Magnons in ultrathin yttrium iron garnets”
Joe Bailey
- 3:30 PM** Coffee break
- 4:00 PM** **Public Lecture:** “Time, Einstein, and the Coolest Stuff in the Universe”
William Phillips

THURSDAY, APRIL 4

8:30 AM Breakfast

9:00 AM “Ultra-light axion dark matter”
Lam Hui

9:45 AM “Dark Matter Superfluidity”
Justin Khoury

10:30 AM Coffee break

10:50 AM “Ultra-light dark matter: a BEC?”
Dan Boyanovsky

11:10 AM “Entropy from Black Holes to Bose Condensates”
Marlan Scully

12:00 PM Lunch and Excursions

7:30 PM Banquet
Speakers: David Snoke, Wolfgang Ketterle, Alexander Fetter

FRIDAY, APRIL 5

- 8:30 AM** Breakfast
- 9:00 AM** “Ultracold atoms as quantum simulators for new materials –optical lattices and synthetic gauge fields”
Wolfgang Ketterle
- 9:45 AM** “From Condensation of Photons to Polaritons in Organic Microcavities”
Peter Kirton
- 10:30 AM** Coffee break
- 10:50 AM** “Driven-dissipative non-equilibrium Bose–Einstein condensation of less than ten photons”
Benjamin T. Walker, Florian Mintert, Jason M. Smith and Robert A. Nyman
- 11:10 AM** “Splitting of photons by cooling”
Christian Kurtscheid, David Dung, Erik Busley, Frank Vewinger, and Martin Weitz
- 11:30 AM** “Enhanced thermalization of exciton-polaritons in optically generated potentials”
Yoseb Yoon, Jude Deschamps, Loren N. Pfeiffer, Ken West, David W. Snoke, and Keith A. Nelson
- 11:50 AM** “Quantum turbulent structure in light,”
Samuel N. Alperin, Abigail L. Grotelueschen, Mark T. Lusk, and Mark E. Siemens
- 12:35 PM** Lunch
- 2:00 PM** “A Supersonically expanding BEC: An expanding universe in the lab?”
Gretchen K. Campbell
- 2:45 PM** “Quantum many-body scars and space-time crystalline order from magnon condensation,”
Thomas Iadecola, Michael Schechter and Shenglong Xu
- 3:30 PM** Coffee break
- 3:50 PM** “Transient supersolid properties in an array of dipolar quantum droplets,”
Fabian Böttcher, Jan-Niklas Schmidt, Matthias Wenzel, Jens Hertkorn, Mingyang Guo, Tim Langen, and Tilman Pfau
- 4:10 PM** “Chaotic distribution of Fano-Feshbach resonances in Thulium atom”
V.A. Khlebnikov, D.A. Pershin, V.V. Tsyganok, E.T. Davletov, E.S.

Kalganova, and A.V. Akimov

4:30 PM “Zero and finite temperature responses of 2D dipolar bosons at non-zero tilt angles”

Khandker Quader and Pengtao Shen

4:50 PM **Conference Closing**