

November 30th (Sunday)

15:00-18:00 Registration (Breezeway-Kohala)

18:00-20:00 Welcome Reception (Poolside)

December 1st (Monday)

8:50–9:00 Opening

Majorana and Parafermions (Berry Jonker, NRL)

9:00–9:30 Matthew Gilbert (Urbana Champaign, USA)
“Non-Abelian Anyons in Condensed Matter:
Majorana to Parafermions”

9:30–9:45 Jelena Klinovaja (Harvard, USA and Univ. Basel, Switzerland)
“Exotic Bound States in Low Dimensions:
Majorana Fermions and Parafermions”

9:45-10:00 Kirill Shtengel (UC Riverside and Caltech, USA)
“Anyonics:
Designing Exotic Circuitry with non-Abelian Anyons”

10:00-10:15 Nicolas Regnault (Princeton, USA)
“One Dimensional Parafermionic Phases and Topological Order”

10:15-10:30 Roman Lutchyn (Microsoft Q station, UC Santa Barbara, USA)
“Interplay between Kondo and Majorana Interactions in Quantum Dots”

10:30-11:00 Coffee Break

Search for Majorana and more (Matthew Gilbert, Urbana Champaign)

11:00-11:30 B. Andrei Bernevig (Princeton, USA)
“Observation of Majorana Fermions in a New Platform”

11:30-11:45 Lukas Fidkowski (Stony Brook, USA)
“Gapped Symmetric Surfaces for Topological Insulators and
Superconductors”

11:45-12:00 Fiona Burnell (Univ. Minnesota, USA)
“Symmetry Protection beyond Band Theory: Constructing Bosonic
Symmetry-Protected Phases in 3D”

December 1st (Monday) continued

- 12:00-12:15 Leonid P. Rokhinson (Purdue, USA)
“Electrostatic Control of Spin Polarization in a Quantum Hall Ferromagnet: a New Platform to Realize non-Abelian Excitations”
- 12:15-12:30 Michael Mulligan (Microsoft Q station, UC Santa Barbara, USA)
“The Bulk-Edge Correspondence in Abelian Fractional Quantum Hall States”
- 12:30-13:00 Ewelina Hankiewicz (Univ. Wurzburg, Germany)
“From Transport in Topological Insulators to the Hybrid Structures: In the Search of Majorana Fermions”
- 13:00-19:00 *Ad hoc* Session

New Phenomena and Applications (Dragica Vasileska, Arizona State)

- 19:00-19:15 Nina Markovic (John Hopkins Univ., USA)
“Weber blockade in Superconducting Nanowires”
- 19:15-19:30 Katsuhiko Nishiguchi (NTT, Japan)
“Counting Statistics of Single-Electron Thermal Noise”
- 19:30-19:45 Mirko Prezioso (UC Santa Barbara, USA)
“Pattern Classification by Memristive Crossbar Array”
- 19:45-20:00 Wolfgang Porod (Notre Dame, USA)
“Single-Metal Nanoscale Thermocouples”

Quantum Control (Wolfgang Porod, Notre Dame)

- 20:00–20:30 Michael Biercuk (Univ. Sydney, Australia)
“Quantum Control using Trapped Ions”
- 20:30–20:45 Koji Ishibashi (RIKEN, Japan)
“Nanowire Quantum Dots in a Superconducting Microwave Cavity”
- 20:45–21:00 Matthieu Delbecq (RIKEN and Tokyo Univ., Japan)
“Addressable Control of Three Spin Qubits in Semiconductor Triple Quantum Dot”
- 21:00–21:15 Shinichi Amaha (RIKEN, Japan)
“Interlayer Charge Transfer and Spin State Transitions in a Triple-Layered Quantum Hall System”

December 2nd (Tuesday)

Topological Insulators (Alexander Balandin, UC Riverside)

- 9:00-9:30 M. Zahid Hasan (Princeton, USA)
“Topological Matter as New forms of 2D Electron Systems:
Fundamental Physics with Potential for Application”
- 9:30-9:45 Nadya Mason (Urbana Champaign, USA)
“Aharonov-Bohm Oscillations in a Quasi-Ballistic 3D Topological
Insulator Nanowire”
- 9:45–10:00 Taylor Hughes (Urbana Champaign, USA)
“Electromagnetic Response Properties and Signatures of 2D and 3D
Topological Semi-Metals”
- 10:00-10:15 Tonica Valla (Brookhaven National Lab., USA)
“Proximity-Induced Phenomena in Hetero-Structures involving
Topological (Crystalline) Insulators”
- 10:15-10:30 Maissam Barkeshli (Microsoft Q station, UC Santa Barbara)
“Synthetic Topological Qubits in Conventional Bilayer Quantum Hall
Systems”
- 10:30-11:00 Coffee Break

Topological Insulators and Devices (Asen Asenow, Univ. Glasgow)

- 11:00-11:30 Leonard Register (UTexas, Austin, USA)
“Topological Insulators in Electronic and Spintronic Applications”
- 11:30-11:45 William Vandenberghe (UTexas, Dallas, USA)
“Using Monolayer-Tin-Based Topological Insulators for Transistor
Applications”
- 11:45-12:00 Pawel Hawrylak (Ottawa University, Canada)
“Quantum Strain Sensor with a Topological Insulator HgTe Quantum
Dot”

December 2nd (Tuesday) continued

2D Materials (Leonard Register, UTexas, Austin)

- 12:00-12:15 Alexander Balandin (UC Riverside)
“Tuning of the Transition Temperature to the Charge-Density-Wave State in TaSe₂ and TiSe₂ Thin Films”
- 12:15-12:45 Berry Jonker (NRL, USA)
“Measurement of High Exciton Binding Energy in the Monolayer Transition-Metal Dichalcogenides WS₂ and WSe₂”
- 12:45-13:00 Antti-Pekka Jauho (TU Denmark, Denmark)
“Theory of Dual-Probe Measurements of Large Nanostructures on Two-Dimensional Materials”
- 13:00-21:00 *Ad hoc* Session

December 3rd (Wednesday)

CMOS Scaling and more (Stephen Goodnick, Arizona State)

- 9:00–9:30 Asen Asenov (Univ. Glasgow, Scotland)
“Evaluation of Heterojunction Nanowire Transistor Options for 7nm CMOS”
- 9:30–9:45 Denis Mamaluy (Sandia National Lab., USA)
“How Much Time does FET Scaling have left?”
- 9:45–10:00 Takashi Nakayama (Chiba Univ., Japan)
“Why Defect Density Remarkably Increases at Metal/Ge Interfaces; Control of Metal-induced Gap States”
- 10:00-10:15 John Conley, Jr. (Oregon State, USA)
“Increasing the Asymmetry of Metal-Insulator-Insulator-Metal (MIIM) Tunnel Diodes through Defect Enhanced Direct Tunneling (DEDT)”
- 10:15-10:30 Takaaki Koga (Hokkaido Univ., Japan)
“Proposal of Spin-Orbital Blockade using InGaAs/InAlAs Double Quantum Wells and Physics of Landau Level Interactions”
- 10:30-11:00 Coffee Break

Spintronics 1 (Siegfried Selberherr, TU Wien)

- 11:00-11:30 Igor Zutic (SUNY Buffalo, USA)
“Graphene Spintronics: From Spin Injection to Magnetologic Gates”
- 11:30-11:45 Jaroslav Fabian (Univ. Regensburg, Germany)
“Functionalized Graphene as a Spintronics Material”
- 11:45-12:00 Giovanni Vignale (Univ. Missouri., USA)
“Surface-Induced Spin-Orbit Coupling in Metallic Films: a Theorem and an ab Initio Calculation”
- 12:00-12:30 Susumu Fukatsu (Tokyo Univ., Japan)
“Taming Spins in a Band-gap Engineered Germanium by Light Touch”

December 3rd (Wednesday) continued

Molecular Electronics (Siegfried Selberherr, TU Wien)

12:30-13:00 Mark Reed (Yale Univ., USA)
"Molecular Transistors"

13:00-18:30 *Ad hoc* Session

18:30-21:00 Banquet (Courtyard)

December 4th (Thursday)

Graphene and Nanotubes (Koji Ishibashi, RIKEN)

- 9:00-9:30 David Ferry (Arizona State, USA)
“Conductance Fluctuations in Graphene Nanoribbons”
- 9:00-9:45 Victor Ryzhii (Tohoku Univ., Japan)
“Graphene Terahertz Electronics and Optoelectronics: Device Concepts and Physics of Device Operation”
- 9:45-10:00 Yuichi Ochiai (Chiba Univ., Japan)
“Metal non-Metal Transition in Multi-Walled Carbon Nanotubes”
- 10:00-10:15 David Janes (Purdue, USA)
“Understanding Nanoscale Transport in Transparent Conductors based on Hybrid 1D/2D Networks”
- 10:15-10:30 Slava Rotkin (Lehigh University, USA)
“Transmission Line Model for Microwave Fast Scanning Tool:
- 10:30-11:00 Coffee Break

Graphene: Growth and Applications (David Ferry, Arizona State)

- 11:00-11:30 Alexander Balandin (UC Riverside, USA)
“Graphene Applications in Thermal Management of Advanced Electronics”
- 11:30-11:45 Henning Riechert (Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany)
“Toward the Large-area and Tailored Growth of Graphene on Different Substrates”
- 11:45-12:00 Kazuhiko Matsumoto (Osaka Univ., Japan)
“Direct Growth of Graphene on SiO₂ Substrate by Thermal & Laser CVDs”
- 12:00-12:15 Shawna Hollen (Ohio State, USA)
“Scanning Tunneling Microscopy Studies of Graphene and Hydrogenated Graphene on Cu(111)”
- 12:15-12:45 Takashi Mizutani (Nagoya Univ. and Chubu Univ., Japan)
“Transfer-Free Fabrication of Graphene Field Effect Transistor Arrays Using Patterned Growth of Graphene on a SiO₂/Si Substrate”
- 12:45-19:00 *Ad hoc* Session

December 4th (Thursday) continued

Molecular Electronics and Simulations (Viktor Sverdlov, TU Wien)

- 19:00-19:15 Yasuteru Shigeta (Tsukuba Univ. and CREST, Japan)
“A Molecular Design of Nonlinear Optical Properties and Conductivity Switches on the Basis of Open-shell Nature”
- 19:15-19:30 Masaaki Araidai (Nagoya Univ., Japan)
“Non-Equilibrium First-Principles Study on Electron Scattering Processes in MTJ”
- 19:30-20:45 Genki Fujita (Tsukuba Univ., Japan)
“Forming of Electrons Wave Packets in Nano Scale Device”

Light Sources, Photonics, and Photovoltaics (Eiji Saitoh, Tohoku Univ.)

- 19:45-20:00 Unil Perera (Georgia State, USA)
“Hot-Carrier Photodetector beyond Spectral Limit”
- 20:00-20:15 Saulius Marcinkevicius (KTH, Sweden)
“Optical Properties of Semipolar InGaN/GaN Quantum Wells Studied on the Nanoscale”
- 20:15-20:30 Dragica Vasileska (Arizona State, USA)
“Reliability Modelling of CdTe Photovoltaics”
- 20:30-20:45 Stephen Goodnick (Arizona State, USA)
“Ultrafast Carrier Relaxation in Quantum Well and Nanowire Structures for Photovoltaic Applications”

December 5th (Friday)

Spintronics 2 (Igor Zutic, SUNY Buffalo)

- 9:00–9:30 Eiji Saitoh (Tohoku Univ. and JAEA, Japan)
“Spin Pumping to Spin Seebeck Effects”
- 9:30–9:45 Alexander Khitun (UC Riverside, USA)
“Experimental Demonstration of Magnonic Holographic Memory”
- 9:45-10:00 Yang-Fang Chen (National Taiwan Univ., Taiwan)
“Self-Polarized Spin-Nanolasers”
- 10:00-10:15 Siegfried Selberherr (TU Wien, Austria)
“Pushing a Non-Volatile Magnetic Device Structure
Towards a Universal CMOS Logic Replacement”
- 10:15-10:30 Viktor Sverdlov (TU Wien, Austria)
“New Design of Spin-Torque Nano-Oscillators”
- 10:30-11:00 Coffee break and Closing