

# **International Workshop on Spin Coherence and Topological Order in Semiconductor Nanosystems**

**CSRC Conference Room I, F1 | November 2 – November 4, 2016**

| Wednesday, November 2, 2016                             |  |
|---|--|
| 08:00 – 17:30   | <b>Registration</b>  |
| 09:00   | <i>Pickup from Holiday Inn Hotel</i>   |
| 09:15   | <i>Pickup from Yitel</i>   |
| 09:30 – 09:40   | <b>Welcoming Address</b>   |
| <b>Morning Session I, Chair: Daniel Loss</b>            |  |
| 09:40 – 10:15<br>(35 minutes)                           | David Awschalom<br>Quantum Control of Single Spins in Semiconductors   |
| 10:15 – 10:50<br>(35 minutes)                           | Martin B. Plenio<br>Diamond Hyperpolarisation for Sensing and Quantum Simulation                                     |
| 10:50 – 11:20   | <i>Coffee Break</i>  |
| <b>Morning Session II, Chair: Shun-Qing Shen</b>        |  |
| 11:20 – 11:55<br>(35 minutes)                           | Rosario Fazio<br>Localized Majorana-Like Modes in a Number Conserving Setting: An Exactly Solvable Model             |
| 11:55 – 12:30<br>(35 minutes)                           | Jelena Klinovaja<br>Engineering Topological Phases in Coupled Wire and Coupled Plane Systems                         |
| 12:30 – 14:00   | <i>Lunch &amp; Break</i>   |
| <b>Afternoon Session I, Chair: Yaroslav Tserkovnyak</b> |  |
| 14:00 – 14:35<br>(35 minutes)                           | Daniel Loss<br>From Majorana Fermions to Parafermions in Nanostructures and Atomic Chains                            |
| 14:35 – 15:10<br>(35 minutes)                           | Jin-Feng Jia<br>Observation of Majorana Fermions in the Vortex on Bi <sub>2</sub> Te <sub>3</sub> /NbSe <sub>2</sub> |
| 15:10 – 15:45<br>(35 minutes)                           | Li Lu<br>Search for Majorana Zero Modes in Josephson Devices Constructed on Bi <sub>2</sub> Te <sub>3</sub> Surface  |
| 15:45 – 16:15   | <i>Coffee Break</i>  |
| <b>Afternoon Session II, Chair: Peter Stano</b>         |  |
| 16:15 – 16:50<br>(35 minutes)                           | Hong-Qi Xu<br>Majorana Fermions in Topological Superconducting Devices Made from Semiconductor Nanostructures        |
| 16:50 – 17:25<br>(35 minutes)                           | Wang Yao<br>Spatially Modulated Optical and Topological Properties in the Moire Superlattices of vdW Heterobilayers  |
| 17:25 – 19:00   | <i>Dinner</i>  |
| 19:00   | <i>Pickup to Yitel &amp; Holiday Inn Hotel</i>   |

| Thursday, November 3, 2016                           |   |
|--|---|
| 09:00  | <i>Pickup from Holiday Inn Hotel</i>  |
| 09:15  | <i>Pickup from Yitel</i>  |
| <b>Morning Session I, Chair: Rosario Fazio</b>       |   |
| 09:30 – 10:05<br>(35 minutes)                        | Klaus Ensslin<br>Spin-Orbit Engineering with Individual Electrons   |
| 10:05 – 10:40<br>(35 minutes)                        | Yaroslav Tserkovnyak<br>Domain Wall in a Quantum Anomalous Hall Insulator as a Magnetoelectric Piston               |
| 10:40 – 11:10  | <b>Photo Taking &amp; Coffee Break</b>  |
| <b>Morning Session II, Chair: Jelena Klinovaja</b>   |   |
| 11:10 – 11:45<br>(35 minutes)                        | Andre Bernevig<br>Nonsymmorphic Topology  |
| 11:45 – 12:20<br>(35 minutes)                        | Kai Chang<br>Semiconductor Interface Engineering Towards Topological Phases   |
| 12:20 – 14:00  | <i>Lunch &amp; Break</i>  |
| <b>Afternoon Session I, Chair: Andre Bernevig</b>    |   |
| 14:00 – 14:35<br>(35 minutes)                        | Shun-Qing Shen<br>Chiral Anomaly in Topological Weyl Semimetal and Graphene   |
| 14:35 – 15:10<br>(35 minutes)                        | Hong Yao<br>Emergence of Supersymmetry on the Boundary of Topological Insulators and in the Bulk of Weyl Semimetals |
| 15:10 – 16:10  | <i>Coffee Break &amp; Poster session</i>  |
| <b>Afternoon Session II, Chair: William A. Coish</b> |   |
| 16:10 – 16:45<br>(35 minutes)                        | Seigo Tarucha<br>Hybrid Spin-1/2 and Singlet-Triplet Spin Qubits with a Triple Quantum Dot                          |
| 16:45 – 17:20<br>(35 minutes)                        | Peter Stano<br>Dephasing of a Singlet-Triplet Qubit in a Gated GaAs Dot due to Non-Ergodic Hyperfine Noise          |
| 17:20 – 19:00  | <i>Dinner</i>   |
| 19:00  | <i>Pickup to Yitel &amp; Holiday Inn Hotel</i>  |
| Friday, November 4, 2016                             |   |
| 09:00  | <i>Pickup from Holiday Inn Hotel</i>  |
| 09:15  | <i>Pickup from Yitel</i>  |
| <b>Morning Session I, Chair: Richard Warburton</b>   |   |
| 09:30 – 10:05<br>(35 minutes)                        | Andrew S. Dzurak<br>Spin-Based Quantum Computing in a Silicon CMOS-Compatible Platform                              |

|  |  |
|--|--|
| 10:10 – 10:40<br>(35 minutes)                            | Dimitrie Culcer<br>A Charge Insensitive Single-Atom Spin-Orbit Qubit in Silicon                      |
| 10:40 – 11:40  | <i>Coffee Break &amp; Poster session</i>   |
| <b>Morning Session II, Chair: Guido Burkard</b>          |  |
| 11:40 – 12:15<br>(35 minutes)                            | Silvano De Franceschi<br>Silicon CMOS Platform for Spin-Based Quantum Information Processing         |
| 12:15 – 14:00  | <i>Lunch &amp; Break</i>   |
| <b>Afternoon Session I, Chair: Silvano De Franceschi</b> |  |
| 14:00 – 14:35<br>(35 minutes)                            | Richard Warburton_<br>The Hyperfine Interaction of Single Spins in a Self-Assembled Quantum Dot      |
| 14:35 – 15:10<br>(35 minutes)                            | William A. Coish<br>Decoupling and Decoherence for Spin-Resonator State Transfer                     |
| 15:10 – 15:45<br>(35 minutes)                            | Xue-Dong Hu<br>Nonadiabatic Spin Manipulation with Adiabatic Protocols                               |
| 15:45 – 16:15  | <i>Coffee Break</i>  |
| <b>Afternoon Session II, Chair: Jian-Qiang You</b>       |  |
| 16:15 – 16:50<br>(35 minutes)                            | Guido Burkard<br>Coupling of Three-Spin Qubits to Their Electric Environment                         |
| 16:50 – 17:25<br>(35 minutes)                            | Guo-Ping Guo<br>Coherent Manipulation and Measurement of High-Spin States in GaAs Double Quantum Dot |
| 17:25 – 17:30  | <b>Closing Remarks</b>   |
| 17:30 – 19:00  | <i>Dinner</i>  |
| 19:00  | <i>Pickup to Yitel &amp; Holiday Inn Hotel</i>   |