

# Program of The 3rd International Workshop on Frontiers in Quantum Optics and Quantum Information

Conference Hall, CSRC, Beijing, 26–28 November, 2015

| Wednesday, November 25, 2015  |   |
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| 15:00 – 20:00   | <b>Registration</b><br>Lobby of the CSRC Building   |
| Thursday, November 26, 2015   |   |
| 08:00 – 18:00   | <b>Registration</b><br>Conference Hall, CSRC Building   |
| 08:55 – 09:10   | <b>Hai-Qing Lin</b> (Director, Beijing Computational Science Research Center)<br>Opening / Welcome  |
| <b>09:10 – 10:45 Morning Session I</b><br><b>Chair:</b> Hai-Qing Lin (Beijing Computational Science Research Center, China)     |   |
| 09:10 – 10:00<br>(50 minutes)   | <b>J. H. Eberly</b> (University of Rochester, USA)<br>Shifting the quantum-classical border   |
| 10:00 – 10:10<br>(10 minutes)   | <i>New Development:</i> Tightly quantifying entanglement sharing – a snapshot<br><b>Xiao-Feng Qian, M. A. Alonso and J. H. Eberly</b>     |
| 10:10 – 10:55<br>(45 minutes)   | <b>Hong Chen</b> (Tongji University, China)<br>Manipulation of interference in meta-atoms   |
| 10:55 – 11:20   | <i>Photo Taking &amp; Coffee Break</i>  |
| <b>11:20 – 12:10 Morning Session II</b><br><b>Chair:</b> Jian-Qiang You ( Beijing Computational Science Research Center, China) |   |
| 11:20 – 12:10<br>(50 minutes)   | <b>Raymond Laflamme</b> (University of Waterloo, Canada)<br>Experimental quantum error correction   |
| 12:10 – 13:30   | <i>Lunch &amp; Break</i>  |
| <b>13:30 – 15:05 Afternoon Session I</b><br><b>Chair:</b> Ting Yu (Stevens Institute of Technology, USA)                        |   |
| 13:30 – 14:20<br>(50 minutes)   | <b>Jörg Wrachtrup</b> (University of Stuttgart, Germany)<br>Using quantum memories for enhanced sensing, photon storage and correlation   |
| 14:20 – 15:05<br>(45 minutes)   | <b>Yang Yu</b> (Nanjing University, China)<br>Simulating the Kibble-Zurek mechanism of the Ising model with superconducting qubit systems |
| 15:05 – 15:30   | <i>Coffee Break</i>   |

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| <b>15:30 – 17:45 Afternoon Session II</b><br><b>Chair: Wen-Xian Zhang (Wuhan University, China)</b>                        |   |
| 15:30 – 16:15<br>(45 minutes)  | <b>Barry Sanders</b> (University of Calgary, Canada)<br>High-fidelity single-shot multi-qubit gates via avoided level crossing                    |
| 16:15 – 17:00<br>(45 minutes)  | <b>Dimitrie Culcer</b> (University of New South Wales, Australia)<br>A charge-insensitive single-atom spin-orbit qubit in silicon                 |
| 17:00 – 17:45<br>(45 minutes)  | <b>Xin Wang</b> (City University of Hong Kong, China)<br>Recent developments on noise-compensating composite pulses for semiconductor spin qubits |
| 18:00 – 20:00  | <i>Dinner</i>   |
| <b>Friday, November 27, 2015</b>   |   |
| <b>09:00 – 10:30 Morning Session I</b><br><b>Chair: William Coish (McGill University, Canada)</b>                          |   |
| 09:00 – 09:45<br>(45 minutes)  | <b>Weiping Zhang</b> (East China Normal University, China)<br>Quantum-correlated interferometers with atomic ensembles                            |
| 09:45 – 10:30<br>(45 minutes)  | <b>Aephraim Steinberg</b> (University of Toronto, Canada)<br>How to count one photon and get a (n average) result of eight                        |
| 10:30 – 10:50  | <i>Coffee Break</i>   |
| <b>10: 50 – 12: 20 Morning Session II</b><br><b>Chair: Nan Zhao (Beijing Computational Science Research Center, China)</b> |   |
| 10:50 – 11:35<br>(45 minutes)  | <b>Peter Rabl</b> (Vienna University of Technology, Austria)<br>PT-symmetry breaking in the steady state of coupled phonon lasers                 |
| 11:35 – 12:20<br>(45 minutes)  | <b>Jiangfeng Du</b> (University of Science and Technology of China, China)<br>Quantum control of spins in solids                                  |
| 12:20 – 14:00  | <i>Lunch &amp; Poster Session</i>   |
| <b>14: 00 – 15: 30 Afternoon Session I</b><br><b>Chair: Bei Zeng ( University of Guelph, Canada)</b>                       |   |
| 14:00 – 14:45<br>(45 minutes)  | <b>Adrian Lupascu</b> (University of Waterloo, Canada)<br>Observation of Floquet states in a strongly driven artificial atom                      |
| 14:45 – 15:30<br>(45 minutes)  | <b>Tiefu Li</b> (Tsinghua University & CSRC, China)<br>Electromagnetically induced transparency in a tunable three-dimensional transmon           |
| 15:30 – 16:30  | <i>Coffee Break &amp; Poster Session</i>  |
| <b>16:30 – 18:00 Afternoon Session II</b><br><b>Chair: Xi Chen (Shanghai University, Canada)</b>                           |   |
| 16:30 – 17:15<br>(45 minutes)  | <b>Xiaobo Zhu</b> (Institute of Physics, CAS, China)<br>Preparation of flux qubit and NV- hybrid system for long-lived quantum memory             |

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| 17:15 – 18:00<br>(45 minutes)  | <b>Nan Zhao</b> (Beijing Computational Science Research Center, China)<br>Proposal for observing dynamic Jahn-Teller effect of single solid state defects                                      |
| 18:00–19:30  | <i>Dinner</i>  |
| <b>Saturday, November 28, 2015</b>   |  |
| <b>09:00 – 10:30 Morning Session I</b><br><b>Chair:</b> Lin Tian (University of California-Merced, USA)                          |  |
| 09:00 – 09:45<br>(45 minutes)  | <b>Bei-Lok Hu</b> (University of Maryland, USA)<br>A microscopic model for quantum optomechanics applied to mirror-field entanglement  |
| 09:45 – 10:30<br>(45 minutes)  | <b>Xin-You Lü</b> (Huazhong University of Science and Technology, China)<br>Nonlinear cavity optomechanics and its applications  |
| 10:30 – 10:50  | <i>Coffee Break</i>  |
| <b>10: 50 – 12: 20 Morning Session II</b><br><b>Chair:</b> Shunlong Luo (Academy of Mathematics and Systems Science, CAS, China) |  |
| 10:50 – 11:35<br>(45 minutes)  | <b>Haohua Wang</b> (Zhejiang University, China)<br>Suppression of dephasing by qubit motion in superconducting qubits  |
| 11:35 – 12:20<br>(45 minutes)  | <b>Thomas Jennewein</b> (University of Waterloo, Canada)<br>Conversion of single photons in cascaded parametric down-conversion: creating photon triplets, GHZ states and heralding of photons |
| 12:20 – 14:00  | <i>Lunch</i>   |
| <b>14: 00 – 16: 15 Afternoon Session</b><br><b>Chair:</b> Bei-Lok Hu (University of Maryland, USA)                               |  |
| 14:00 – 14:45<br>(45 minutes)  | <b>Lin Tian</b> (University of California-Merced, USA)<br>Cavity-assisted dynamical quantum phase transition in superconducting systems  |
| 14:45 – 15:30<br>(45 minutes)  | <b>Shunlong Luo</b> (Academy of Mathematics and Systems Science, CAS, China)<br>Quantum non-Markovianity   |
| 15:30 – 16:15<br>(45 minutes)  | <b>Ting Yu</b> (Stevens Institute of Technology, USA)<br>Error-correction for phase and amplitude noises via quantum measurement   |