

Dr. Jing Liu

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Employment

- **Associate Professor** (Jan. 2018 - present) in Center for gravitational experiments, School of Physics, Huazhong University of Science and technology.
- **Postdoctoral fellow** (Oct. 2015 - Dec. 2017) in Department: Department of Mechanical and Automation Engineering Institution: The Chinese University of Hong Kong Principal investigator: Prof. Dr. Haidong Yuan

Research Interests

My current research interest includes selected topics in quantum metrology, quantum control, quantum information theory and quantum dissipation. Recently, I am mainly interested in the design of quantum metrological protocols, especially controlled protocols, to improve the measure precision of some quantities. For example, I have applied the Gradient Ascent Pulse Engineering (GRAPE) technology in the design of control sequences for metrological scheme. Meanwhile, I am also interested in control designs for various tasks and any other topic in quantum physics and quantum information. My current major research is summarized as follows.

- **Quantum Metrology**
 - (1) Design of controlled protocols to enhance the measure precision in parameter estimation and quantum sensing, especially in noisy circumstances.
 - (2) Theoretical study of quantum phase estimation, including single and multiple phase estimations, in optical interferometers.
- **Quantum Information Theory**
 - (1) Quantum correlation, including the criteria, witness and dynamical behaviors of entanglement, discord and coherence.
 - (2) Generation and validity of spin squeezing.
- **Quantum Dissipation**
 - (1) Quantification of non-Markovianity.
 - (2) Depiction of non-Markovian dynamics in natural and artificial systems.
 - (3) Quantum speed limit in non-Markovian dynamics.