Special Issue

Quantum Measurements and Quantum Metrology

Message from the Guest Editor

Quantum measurements and quantum sensing are two rapidly evolving and closely related areas of quantum physics. Their scope ranges from the very foundations, establishing and testing fundamental limits on the resolution of quantum measurements, to widespread applications, not least in the area of quantum information processing, quantum communication, and quantum algorithms. On the measurement front, POVMs and weak measurements have become part of the information processing toolbox. In the area of sensing and metrology, the quantum Fisher information, as well as the related Cramér–Rao bound, is employed to estimate the ultimate precision in quantum metrology. This Special Issue welcomes contributions from experimentalists and theorists in these broadly defined areas. The topics to be addressed in this Special Issue include, but are not limited to, the following:

- Quantum measurements;
- Fundamental limits;
- POVMs and weak measurements;
- Continuous variable systems;
- Quantum state tomography;
- Quantum sensing and metrology;
- Quantum Fisher information;
- The Cramer–Rao bound;
- Sensor arrays.

Guest Editor

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The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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