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Optimal and Variational Quantum Metrology

Tuesday, 7 May 2024 15:30 (30 minutes)

Quantum sensors are an established technology that has opened up new possibilities for precision sensing in various scientific fields. The use of entanglement for quantum-enhancement is paving the way for the development of next-generation sensors that can reach the ultimate precision limits set by quantum physics. However, determining how state-of-the-art sensing platforms may be used to converge to these ultimate limits is an outstanding challenge. In this talk, I will discuss how concepts from the field of quantum information processing can be merged with metrology to implement experimentally a *programmable quantum sensor* that operates near the fundamental quantum mechanical limits. Looking forward, I will briefly discuss how the principles of variational quantum metrology can be expanded and applied to the Fisher framework for many-measurement scenarios and multiparameter sensing.

Abstract category

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