LICENSING OPPORTUNITY:
QUANTUM SENSOR NETWORK AND MEASURING A SINGLE LINEAR FUNCTION OF UNKNOWN PARAMETERS WITH A QUANTUM SENSOR NETWORK WHILE USING THE MINIMUM AMOUNT OF ENTANGLEMENT

DESCRIPTION

Problem

Entanglement allows one to reduce the measurement time (or equivalently reduce the measurement error) of measuring functions of unknown parameters. Our protocols allow one to achieve this improvement for many classes of functions with less entanglement, which opens the door to nearer-term and higher-fidelity implementations of optimal measurement protocols.

Invention

New protocols that minimize the entanglement necessary to measure many classes of linear functions.

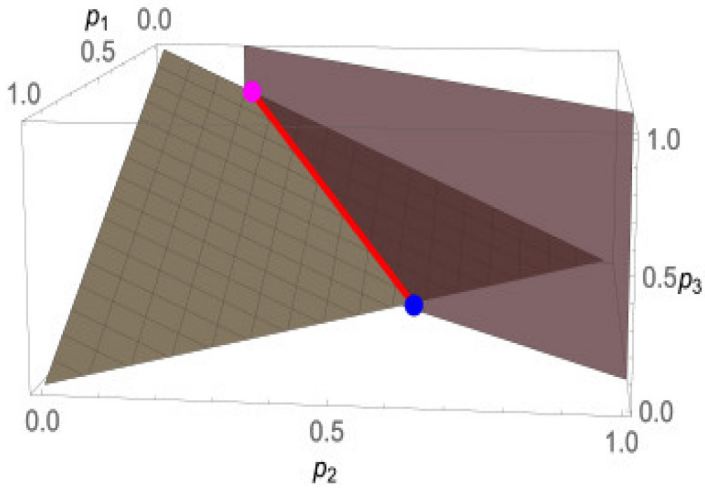
BENEFITS

Commercial Application

These protocols can be used to measure spatially varying fields such as magnetic fields, electric fields, gravitational fields, and temperature, with applications in fields such as chemistry, medicine, biology, materials science, physics, geodesy, and geophysics.

Competitive Advantage

- Substantial improvement for near-term quantum sensor networks.
- Compared to known protocols, our protocols are capable of minimizing the entanglement that is required to achieve the information-theoretic optimal measurement of these functions.



Family of optimal protocols - any point on the red line represents an optimal protocol.

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