

Witnessing entanglement with the Fisher information: from metrology to Bell nonlocality.

Augusto Smerzi

QSTAR, INO-CNR and LENS, 50125 Firenze (Italy)

E-mail: augusto.smerzi@ino.it

We show that entanglement can be witnessed by the Fisher information. This proves a deep relation between entanglement and the distinguishability of quantum states. The Fisher information therefore provides the basic framework to develop quantum technologies for metrology and interferometric phase estimations, and also shed some new light in old foundational problems like in Bell nonlocality and the quantum Zeno paradox.