Joint CQSE and CASTS Seminar

2020
Apr. 10, Friday

TIME Apr. 10, 2020, 2:30~3:30pm
TITLE Genuine quantum teleportation.
SPEAKER Prof. Che-Ming Li (Dept. of Engineering Science, National Cheng Kung University)
PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

Quantum teleportation is a method for utilizing quantum measurements and the maximally entangled Einstein-Podolsky-Rosen (EPR) pair to transmit an unknown quantum state. It is well known that all entangled states demonstrate so- called "nonclassical teleportation" that cannot be simulated by the seminal classical measure-prepare strategy. Herein, we propose a new benchmark for revealing that not all nonclassical teleportations are truly quantum-mechanical. Rather, there exists a stronger classical-teleportation model, which includes the measure-prepare mimicry as a special case, that can describe certain nonclassical teleportations. Invalidating such a general classical model indicates genuine quantum teleportation wherein both the pair state and the measurement are truly quantum-mechanical. We prove that EPR steering empowers genuine quantum teleportations, rather than entanglement. Moreover, the new benchmark can be readily used in the practical experiments for ensuring that genuine quantum teleportation is implemented. Our results provide stricter criteria for implementing quantum-information processing where genuine quantum teleportation is indispensable.

▲防疫期間僅限本校人員參與 Open for members of National Taiwan University.

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▲強烈建議全程戴口罩並與鄰座參與者保持間隔 Wearing sanitary masks all the time and keep gaps between each other are highly recommended.

▲場地備有酒精供雙手消毒使用 We provide alcohol sanitizer to keep your hands clean.