Real Sociedad Española de Física

ID de la contribución : **284** Tipo : **Oral parallel contribution**

Characterising multi-photon quantum interference with decoy-state techniques

martes, 18 de julio de 2017 16:35 (20)

Correct characterization of general linear optical networks is becoming a promising task due to the continuous development in some fields as quantum computation and quantum communications, in which quantum optics is typically involved. Specifically, it is of great importance in several applications to know the photon number statistics at the outputs of the linear network as a function of the input photon number to check its quality. Although in recent years there have been some advances in multi-photon sources and photon number resolution a simple plug-and-play method for characterising general linear optics networks with enough accuracy is still missing. We propose a simple and practical method to estimate these photon number statistics that can be implemented with laser sources that generate quantum signals which are diagonal in the Fock basis in combination with threshold single-photon detectors.

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Clasificación de la sesión : Quantum Technologies: joint symposium of the Quantum Information and Quantum and Non-linear Optics specialised groups

Clasificación de temáticas : Quantum and Non-linear Optics