1. Record Nr. UNINA9910254611403321

Autore	Shadbolt Peter
Titolo	Complexity and Control in Quantum Photonics / / by Peter Shadbolt
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016
ISBN	3-319-21518-3
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (222 p.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5053
Disciplina	530.12
Soggetti	Quantum optics Quantum computers Spintronics Chemistry, Physical and theoretical Quantum theory Quantum Optics Quantum Information Technology, Spintronics Theoretical and Computational Chemistry Quantum Computing Quantum Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"Doctoral Thesis accepted by the University of Bristol, UK."
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Introduction and Essential Physics -- A Reconfigurable Two-qubit chip -- A Quantum Delayed-Choice Experiment -- Entanglement and Non locality without a Shared Frame -- Quantum Chemistry on a Photonic Chip -- Increased complexity -- Discussion.
Sommario/riassunto	This work explores the scope and flexibility afforded by integrated quantum photonics, both in terms of practical problem-solving, and for the pursuit of fundamental science. The author demonstrates and fully characterizes a two-qubit quantum photonic chip, capable of arbitrary two-qubit state preparation. Making use of the unprecedented degree of reconfigurability afforded by this device, a novel variation on Wheeler’s delayed choice experiment is implemented, and a new technique to obtain nonlocal statistics without a shared reference frame

is tested. Also presented is a new algorithm for quantum chemistry, simulating the helium hydride ion. Finally, multiphoton quantum interference in a large Hilbert space is demonstrated, and its implications for computational complexity are examined.