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Quantum Interference Of Topological Edge-States JEAN-LUC TAMBASCO, RMIT University, GIACOMO CORRIELLI, Politecnico di Milano, ROBERT CHAPMAN, RMIT University, ANDREA CRESPI, Politecnico di Milano, INNA KRASNOKUTSKA, RMIT University, ODED ZILBERBERG, ETH Zurich, ROBERTO OSELLAME, Politecnico di Milano, ALBERTO PERUZZO, RMIT University, QUANTUM PHOTONICS LAB TEAM, ISTITUTO DI FOTONICA E NANOTECNOLOGIE COLLABORATION, INSTITUTE FOR THEORETICAL PHYSICS COLLABORATION — Quantum photonics is a vibrant field that promises to enhance information processing by harnessing quantum effects in single photons. Many platforms used to manipulate quantum states suffer high loss and noise, limiting their scalability. Topology introduces the idea of robust states known as edge-states and recently, topological states have been demonstrated in photonic systems, and used to effectively transport light. We report quantum interference of edge-states in a photonic chip. High control over the circuit layout is achieved using femtosecond laser-written waveguides in glass. These results demonstrate on chip quantum state transfer and quantum interference of photonic topological states, providing a route to robust quantum information processing.

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