

Non-reciprocal devices in fiber optic communication



Overview

Nonreciprocal optical devices, allowing transmission of light with different efficiencies in opposite directions, are key elements for modern optical communication and even quantum information technologies, but elusive to be integrated on a chip to date. Such devices exploring nonlinearity can. Optical nonreciprocity is of fundamental importance for signal processing in modern optical communication systems. An all-fiber device, containing two mutually coupled Fabry-Perot (FP) resonators to realize broken parity-time (PT) symmetry, is demonstrated to achieve nonreciprocal light. A reflective all-fiber optical current transformer based on a spatial non-reciprocal phase modulation technique is investigated by theoretical analysis and experimental measurement. They are technically related to Faraday isolators, and on a broader scale similar to electronic circulators. Typically, a circulator has three or four optical ports (inputs / outputs). Lightwave systems, including fiber optic and integrated optic, are becoming more and more complex, new function blocks (or components) and networking strategies are very important for future highly integrated lightwave circuits.

Non-reciprocal devices in fiber optic communication



In this paper, we propose an approach to implement nonreciprocal light transmission in an all-fiber device with remotely tunable isolation ratio and switchable isolation direction.



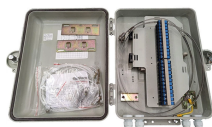
A reflective all-fiber optical current transformer based on a spatial non-reciprocal phase modulation technique is investigated by theoretical analysis ...



Nonreciprocal photonic devices including optical isolators and circulators, are widely used in information photonic systems and are indispensable in fiber optical communication and fiber optical sensing ...



The latter is very sensitive to loss and thus poses new constraints to the performance of current fiber components. In particular, recent quantum network prototypes underlined the absence ...



A reflective all-fiber optical current transformer based on a spatial non-reciprocal phase modulation technique is investigated by theoretical analysis and experimental measurement.



We theoretically study a technique for a broadband nonreciprocal wave retarder whose quarter-wave plate phase retardation is the same in forward and backward directions. The system is ...



The primary contributions of this dissertation are the study of common nonreciprocal optical effects and demonstration of several basic applications to fiber components and fiber metrology systems.



We proposed an approach to implement nonreciprocal light transmission in an all-fiber device with a remotely switchable isolation direction, a tunable isolation ratio and a tunable ...



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Definition: a non-reciprocal optical device sending light from each input to the next output port
 Categories: general optics, photonic devices
 Concept tree: optical elements polarization optics ...



Abstract and Figures Nonreciprocal light transmission in an all-fiber device with remotely tunable isolation ratio and switchable isolation direction is proposed and demonstrated.

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