Advancements in Photonic Integrated Circuits for Telecommunications

Rowan Garcia
PhD
Technical University of Denmark
Anker Engelunds Vej 1, 2800 Kgs. Lyngby, Denmark

Quinn Moore
PhD
University of Porto
Praça de Gomes Teixeira, 4099-002 Porto, Portugal

Robin Wright
PhD
Warsaw University of Technology
Plac Politechniki 1, 00-661 Warszawa, Poland

Abstract. Photonic integrated circuits (PICs) are paving the way for the next generation of telecommunication networks. This paper discusses recent advancements in PIC technology, focusing on their application in enhancing bandwidth and reducing latency. The study highlights the role of PICs in the evolution of high-speed networks and examines challenges in fabrication and integration, offering insights into future developments.

Keywords: Photonic Circuits, Telecommunications, Bandwidth, Latency, Integration

Introduction

The demand for faster and more efficient telecommunication networks has led to significant advancements in photonic integrated circuits (PICs). These circuits utilize photons instead of electrons to transmit data, offering substantial improvements in bandwidth and latency. This paper explores the latest developments in PIC technology and their impact on telecommunications. We discuss the advantages of PICs over traditional electronic circuits, including higher data rates and energy efficiency. The paper also addresses the challenges in fabricating and integrating PICs into existing networks and provides a glimpse into future possibilities for telecommunication infrastructures.

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