

Photonic Crystals and Their Application in Optical Computing

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Abstract. Photonic crystals are materials with periodic dielectric structures that affect the motion of photons, finding extensive applications in optical computing. This paper reviews the latest developments in photonic crystal technologies, focusing on their role in enhancing computational speed and efficiency. We explore fabrication techniques and potential future directions in this rapidly evolving field.

Keywords: Photonic Crystals, Optical Computing, Dielectric Structures, Fabrication Techniques, Information Processing

Introduction

The manipulation of light at the nanoscale has led to significant advancements in optical computing, with photonic crystals playing a central role. These materials, characterized by their periodic dielectric structures, can control the flow of light, making them invaluable for applications in optical circuits and information processing. This paper explores the state-of-the-art developments in the field of photonic crystals, examining how they contribute to increased computational speed and efficiency. We discuss various fabrication methods, including recent innovations that have expanded the capabilities and applications of photonic crystals. By understanding these advancements, we can anticipate future trends and potential breakthroughs in optical computing technology.

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References

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