

Discover How Manipulation of Near Field Propagation and Far Field Radiation of Surface Can Revolutionize Technology!

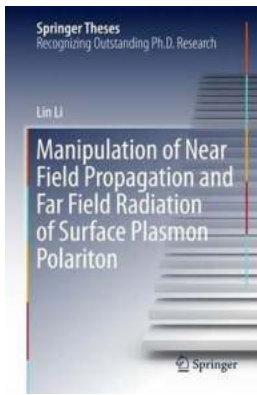
Are you curious about the groundbreaking advancements in technology that are revolutionizing various industries today? Look no further! In this article, we will delve into the fascinating world of manipulating near field propagation and far field radiation of surfaces. Prepare to be amazed as we unravel the potential implications of this breakthrough innovation and how it could shape the future.

Defining Near Field Propagation and Far Field Radiation

Before we dive deeper into the subject, let's first understand the concepts of near field propagation and far field radiation. Near field propagation refers to the transfer of electromagnetic energy between two closely situated objects. It occurs within a short distance from the source and is strongly influenced by the objects' geometries and material properties. On the other hand, far field radiation refers to the energy that propagates over longer distances and is less affected by the physical properties of the objects.

Manipulating Near Field Propagation

The ability to manipulate near field propagation opens up a world of possibilities in communication, energy transfer, and sensing technologies. By carefully engineering the geometries and material properties of surfaces, researchers have demonstrated the ability to control the propagation of electromagnetic waves at extremely small scales. This has immense implications for the miniaturization of devices and the development of high-speed communication systems.



Manipulation of Near Field Propagation and Far Field Radiation of Surface Plasmon Polariton (Springer Theses)

by Lin Li (1st ed. 2017 Edition, Kindle Edition)

★★★★★ 5 out of 5

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One particular area of interest is the field of wireless power transfer. Through the manipulation of near field propagation, it is now possible to wirelessly transfer energy between devices without the need for physical connections. Imagine your smartphone charging seamlessly simply by placing it on a specially designed surface. This technology could revolutionize the way we power our devices, eliminating the hassle of tangled cords and diminishing the need for multiple charging ports.

Revolutionizing Far Field Radiation

While near field propagation offers exciting prospects, manipulating far field radiation can have even broader implications. By altering the properties of surfaces, scientists have achieved remarkable control over the emission of

electromagnetic waves in the far field. This has significant ramifications for various sectors, including telecommunications, imaging, and even defense.

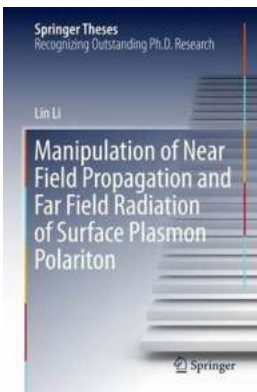
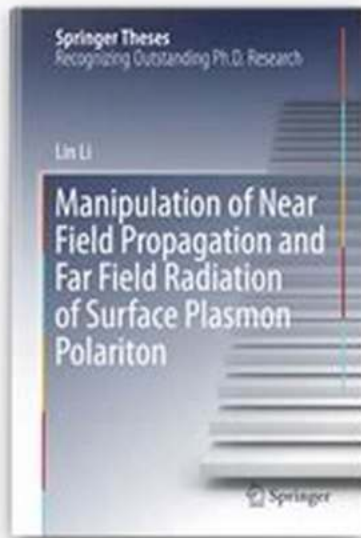
One key application is in the development of advanced antennas. By precisely engineering the far field radiation patterns of antennas, engineers can improve signal strength, enhance wireless communication capabilities, and extend the range of devices. This opens up possibilities for improved connectivity and data transfer rates, enabling faster and more reliable internet connections, seamless integration of smart devices, and greater precision in satellite communication.

The Future Possibilities

As we continue to explore and understand the manipulation of near field propagation and far field radiation of surfaces, the potential for innovation seems limitless. Researchers are constantly pushing the boundaries of what is possible, bringing us closer to an era of highly efficient, compact devices with advanced functionalities.

From healthcare to transportation, from communications to energy, the impact of this technological breakthrough promises to touch numerous aspects of our lives. Imagine medical devices that can precisely target and deliver treatments within the human body, or autonomous vehicles that can communicate seamlessly with each other and their environment. The possibilities are truly awe-inspiring!

The manipulation of near field propagation and far field radiation of surfaces represents a monumental leap in technology. By unlocking the secrets of these phenomena, researchers are paving the way for a future where devices are smarter, more connected, and more efficient than ever before. Brace yourself for a world of endless possibilities as we continue to ride the wave of innovation and reshape the way we interact with technology!



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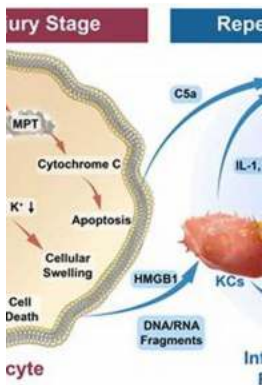


This book mainly focuses on the study of steering electromagnetic fields in near-field and far-field contexts involving plasmonic structures. It also offers a new approach to achieving full control of optical polarizations and potentially boosting the development in photonic information processing. A new in-plane phase modulation method is proposed and described, by means of which a series of optical beams were realized with nanostructures in metal surfaces, such as a plasmonic Airy beam, broad band focusing beam, and demultiplexing, collimated beam, as well as an optical orbital angular momentum (OAM) beam. Further, the book presents a plasmonic polarization generator, which can reconfigure an input polarization to all kinds of states simultaneously.



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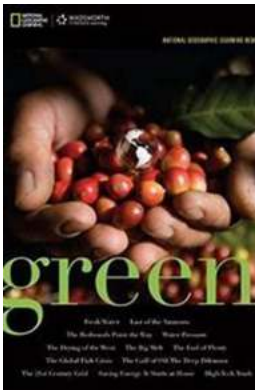
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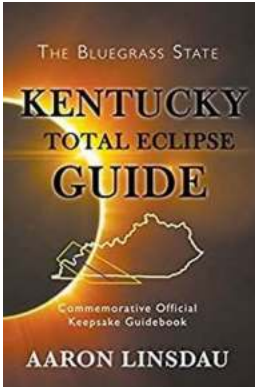
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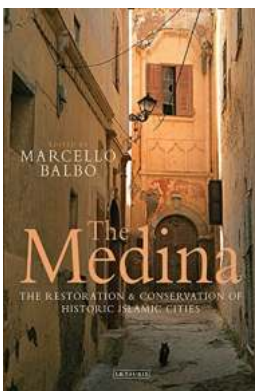
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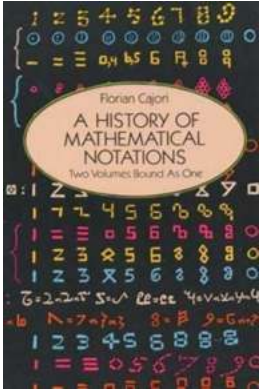
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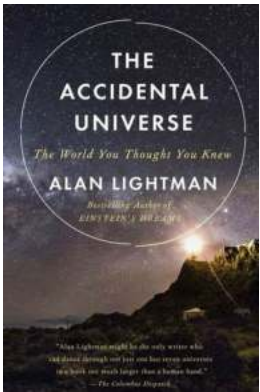
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