

Li-Fi Technology for Data Transfer

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Abstract: *In today's world, the demand for data is rapidly increasing, and wireless environments are becoming more crowded. The limitations of traditional radio-frequency (RF) communication systems, like Wi-Fi, are more apparent. Problems such as limited spectrum availability, electromagnetic interference, and network congestion have driven researchers to look for new ways to transmit data. Li-Fi (Light Fidelity) is an exciting optical wireless communication technology that uses visible light for fast, secure, and interference-free data transfer. Despite its great potential, Li-Fi still faces some challenges, including the need for line-of-sight communication, a limited range, and the effects of nearby light sources. Ongoing research focuses on addressing these challenges by improving photonic components, using adaptive modulation techniques, and developing standardized protocols like IEEE 802.11bb, which ensures compatibility for light communication networks.*

With continued innovation and the growing need for faster, safer, and more environmentally friendly data transmission, Li-Fi is set to become a groundbreaking technology. It could complement or possibly replace Wi-Fi in certain situations, marking the beginning of a new age in high-speed optical wireless connectivity.

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