

Review of: "Reconfigurable Intelligent Surface Constructing 6G Near-field Networks"

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The paper presents a comprehensive review of the application of Reconfigurable Intelligent Surfaces (RIS) in constructing near-field environments for 6G networks, a timely and highly relevant topic as the industry transitions from 5G to 6G technologies. The focus on near-field communication technologies using RIS is particularly pertinent given the expected performance demands of 6G networks, including higher data rates and lower latency. This paper distinguishes itself by providing a systematic review of existing literature and advancements in the field of RIS for 6G, a relatively unexplored area with substantial potential for future research and application. The detailed examination of near-field propagation characteristics, the impact of RIS on these characteristics, and the proposed new paradigms for network design and deployment demonstrates both originality and depth.

The technical content is robust, with a clear explanation of the principles behind near-field and far-field propagation and how RIS can manipulate electromagnetic waves to enhance 6G network performance. The sections detailing the challenges of implementing these technologies are particularly insightful, highlighting the practical considerations that must be addressed to realize these systems.

The paper is well-structured, with clear headings and a logical flow that guides the reader through the complex topics discussed. The use of tables and diagrams to clarify and summarize the technical discussions enhances readability and understanding. The discussion on the potential of RIS to support diverse applications such as ISAC and SWIPT is forward-thinking. It sets the stage for future research directions, particularly in exploring the practical deployment of these technologies in real-world scenarios. The challenges listed in the conclusion provide a clear roadmap for future research.

While the paper is comprehensive, adding case studies or simulation results could further strengthen the arguments by providing empirical evidence to support the theoretical claims. Also, more detailed discussions on the interoperability of RIS with existing network infrastructures could enhance the paper's applicability to current technological transitions.