Wave-Controlled Reconfigurable Intelligent Surfaces

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CONTACT

Edward Hsieh
hsiehe5@uci.edu
tel: 949-824-8428.

OTHER INFORMATION

KEYWORDS

Reconfigurable Intelligent Surface, Large Intelligent Surface, Reflectarray, Metasurface, Varactor

CATEGORIZED AS

- » **Communications**
  - » Other
  - » Wireless

RELATED CASES

2021-773-0

BRIEF DESCRIPTION

An innovative technology that dynamically manipulates electromagnetic waves for improved wireless communication and interference management.

FULL DESCRIPTION

Reconfigurable Intelligent Surfaces (RISs) are programmable metasurfaces capable of adaptively steering electromagnetic energy in desired directions using controllable phase shifting cells. This technology modifies the propagation environment to enhance wireless access and eliminate interference, enabling co-existence with other wireless services. It utilizes a novel wave-controlled architecture for efficient, scalable implementation, leveraging signal processing and machine learning for optimization in MIMO systems.

SUGGESTED USES

- Next-generation wireless communication networks.
- Advanced radar and navigation systems.
- Multi-cell MIMO systems for enhanced connectivity.
- Interference management in mixed wireless service environments.
- Intelligent infrastructure for smart cities and IoT

ADVANTAGES

- Enhanced wireless network coverage and accessibility.
- Significant reduction in interference, promoting co-existence with other wireless services.
- Substantial decrease in hardware requirements and complexity.
- Improved spectrum utilization and efficiency.
- Cost and power consumption reduction due to simplified control mechanisms.
- Scalable and adaptable for next-generation wireless, radar, and navigation systems.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO 2022/204191	12/29/2022	2021-773

Patent Pending

RELATED MATERIALS

- Ayanoglu E, Capolino F, Swindlehurst AL. Wave-Controlled Metasurface-Based Reconfigurable Intelligent Surfaces. IEEE Wireless Communications. Published online 2022:1-16.