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Nota di contenuto	Introduction -- Overview of OAM technology in 5G and Beyond Communications -- Circular Array-based Radio Frequency Point-to-point OAM Communications -- Point-to-point OAM-MIMO Communications -- Circular Array-based Radio Frequency Point-to-multipoint OAM Wireless Backhaul -- Hybrid Circular Array and Luneberg Lens for Long-Distance OAM Wireless Communications -- Circular Array-based Joint OAM Radar-Communication Systems -- Future Research Directions and Applications -- Conclusion.
Sommario/riassunto	This book presents the modeling and transmission theory of RF OAM communications. The book features the UCA-based RF point-to-point OAM communication system, the UCA-based RF point-to-multipoint OAM wireless backhaul network, the HCCL structure for long-distance OAM transmissions, and the UCA-based joint OAM RadCom scheme. For the UCA-based RF point-to-point OAM communication system, a 2-D ESPRIT-based distance and AoA estimation method is first introduced, followed by an OAM reception scheme including the hybrid

mechanical and electronic beam steering with the estimated AoA and the amplitude detection with the estimated distance. The proposed RF OAM communication scheme is extended to the RF OAM-MIMO system equipped with UCCAs. For the UCA-based RF point-to-multipoint OAM wireless backhaul network, an OAM-based multi-user distance and AoA estimation method is introduced, followed by a multi-user OAM preprocessing scheme. At last, the proposed methods are extended to the downlink multi-user OAM-MIMO wireless backhaul system equipped with UCCAs. Moreover, a novel HCCL structure is introduced to realize long-distance OAM transmission. For the UCA-based joint OAM RadCom scheme, an OAM-based 3-D super-resolution position estimation and rotation velocity detection method is introduced, and then the PCRB of the OAM-based estimates and the transmission rate of the integrated system are derived and analyzed. To achieve the best performance trade-off, the transmitted integrated OAM beams is optimized by means of an exhaustive search method. Finally, this book discusses future research directions to inspire further investigation in the field of RF OAM communications from different perspectives.

Presents comprehensive knowledge of the modeling and transmission theory of RF OAM communications; Features analysis of UCA-based RF point-to-point OAM communication systems and the UCA-based RF point-to-multipoint OAM wireless backhaul network; Includes research directions to inspire further investigation in the field of RF OAM communications from different perspectives.

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