

Performance Analysis of Relay-Aided NOMA in Underwater Optical Wireless Communication System under Ocean Turbulence

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Abstract—Non-orthogonal multiple access (NOMA) is a promising technique to improve the spectral efficiency. To exploit the benefits of NOMA in underwater optical wireless communication systems (UOWC) sufficiently, this paper considers a relay-aided NOMA network for UOWC. Specifically, a UOWC model including ocean turbulence and solar radiation noise is established. On this basis, the relay selection and user pairing of relay-assisted NOMA are modeled as one problem. Additionally, in order to maximize the overall sum rates, we design a stepwise optimization power allocation scheme (SOPA) that takes the primary link and relay link into account simultaneously, the effectiveness of the proposed scheme is strictly evaluated in the relay-aided NOMA UOWC model.

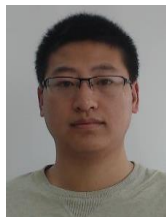
Keyword—NOMA, relay-aided, UOWC, relay selection, user pairing, SOPA



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