

Brought to you by [INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA](#)



Scopus



[Back](#)

Machine Learning-Enhanced Power Allocation for mMIMO-NOMA Systems in 6G Networks

[International Conference on Computer and Communication Engineering, ICCCE](#) • Conference Paper • 2025 • DOI: [10.1109/ICCCE66530.2025.11473974](#)

[Hassan, Mohamed](#)^a ; [Hamid, Khalid](#)^a ; [Hassan, Elmuntaser](#)^b ; [Saeed, Rashid A.](#)^c ; [Elbasheir, Mohammed S.](#)^d ; [+1 author](#)

^aIslamic Uni., Omdurman, Dept. of Electrical Eng, Omdurman, Sudan

[Show all information](#)

0

Citations

[View PDF](#)

[Full text](#)

[Export](#)

[Save to list](#)

[Document](#)

[Impact](#)

[Cited by \(0\)](#)

[References \(22\)](#)

[Similar documents](#)

Abstract

To enhance swift, wide communications with low latency, it is essential to address the challenges posed by emerging 6G technology. These concerns encompass the necessity to expand the frequency spectrum and augment the capacity while minimizing resource expenditures and delay. A novel strategy is suggested to enhance spectrum efficiency (SE), latency, and fairness by integrating dynamic reconfigurable intelligent surfaces (RIS) into downlink (DL) non-orthogonal multiple access (NOMA) power domain (PD) systems utilizing massive multiple-input, multiple-output (mMIMO) technology within the framework of 6G wireless networks. The system's scalability is evaluated to ensure optimal performance across various situations as the user count and SNR levels rise. Employed a distinctive optimization strategy to allocate power among users, effectively utilizing the water-filling logarithmic. The findings demonstrate that the incorporation of dynamic RIS in the mMIMO DL NOMA PD system markedly enhances SE, reduces latency, and improves fairness. The

implementation of the proposed logarithmic method has demonstrated significant efficacy in power allocation, enhancing system capabilities while optimizing SE, latency, and fairness. The results provide essential insights for improving future wireless communication systems, and in accordance with the predicted equation, the Monte Carlo findings demonstrate that our work is precise and dependable. © 2025 IEEE.

Author keywords

massive MIMO; NOMA; Reconfigurable Intelligent Surfaces (RIS); Spectrum Efficiency (SE)

Indexed keywords

Engineering controlled terms

Dynamic models; Dynamics; Machine learning; MIMO systems; Monte Carlo methods; Spectrum efficiency; Wireless networks

Engineering uncontrolled terms

Massive MIMO; Multiple access; Multiple outputs; Non-orthogonal; Non-orthogonal multiple access; Power allocations; Reconfigurable; Reconfigurable intelligent surface; Spectra efficiency; Spectrum efficiency

Engineering main heading

Learning systems

© Copyright 2026 Elsevier B.V., All rights reserved.

Abstract

Author keywords

Indexed keywords

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語版を表示する](#)[查看简体中文版本](#)[查看繁體中文版本](#)[Просмотр версии на русском языке](#)

Customer Service

[Help](#)[Tutorials](#)[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗ [Cookies settings](#)

All content on this site: Copyright © 2026 [Elsevier B.V.](#) ↗, its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the relevant licensing terms apply.

