

Energy Efficiency Analysis of novel Index Modulation-based Non-Orthogonal Multiple Access (IMNOMA) system for 5G Networks

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Abstract—The requirements for high data rates, spectrum efficiency, energy efficiency, and worldwide connectivity should be addressed by future generations of wireless communication networks. The orthogonal multiple access systems cannot meet these demands. Resources are allocated to each user orthogonally in OMA techniques, including TDMA, FDMA, CDMA, and OFDMA. In a NOMA system, all users can concurrently share resources that are available to them. NOMA is a novel multiple-access technology as it satisfies the requirements for high data speeds, spectrum efficiency, and widespread connectivity. Users are informed in Index modulation utilizing both constellation symbols as well as index symbols. This work proposes IM-NOMA, a unique Index Modulation-based NOMA system. A detailed analysis of the proposed scheme's energy efficiency is performed. The energy efficiency of the proposed scheme is analyzed in detail for different parameters. When compared to the existing modulation schemes, the suggested IM-NOMA performs significantly better.

Keyword—Energy efficiency, Index modulation, Non-orthogonal Multiple Access, Spectral efficiency.



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