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| Title | Capacity Analysis of MIMO Channels Under High SNR Using Nakagami-q Fading Distribution | | |
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| Abstract |  |
| This study explores the capacity of multiple-input multiple-output (MIMO) wireless channels under high signal-to-noise ratio (SNR) conditions, incorporating Nakagami-q fading distribution alongside Rayleigh and Rician fading models. The main objective is to develop an analytical framework that accurately models MIMO channel capacity under high-SNR conditions using Nakagami-q fading and compares its performance with conventional fading models. By employing a robust wireless channel modeling approach, the study examines the impact of various antenna configurations on system performance. The derived framework assesses how different fading conditions affect capacity, showing that MIMO systems effectively mitigate multipath effects. The results reveal that channel capacity improves with an increasing number of antennas and favorable fading parameters, emphasizing the significance of antenna configurations in enhancing performance. The comparative analysis highlights substantial differences in capacity across fading models, offering critical insights to optimize next-generation wireless channel modeling in diverse environments. | |