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| **Abstract:** |  |
| The amalgamation of Multiple-Input Multiple-Output (MIMO) and Non-Orthogonal Multiple Access (NOMA) technologies emerges as a triumphant remedy to the challenges posed by the 5G cellular system and its futuristic counterparts. In this groundbreaking research endeavor, we embark on a journey to unravel the secrets concealed within the intricate fabric of wireless networks operating under the spellbinding influence of a Rayleigh fading channel. With relentless determination, we decipher the mystifying equations that yield the elusive closed-form expression for outage capacity and the probability equation for Down Link (DL) NOMA. Beyond the realms of 5G, our quest transcends to the uncharted territory of 6G wireless technology, where we dare to explore the impact of dynamic bandwidth variations. Venturing further, we delve into the depths of system performance evaluation, traversing the treacherous landscape of Bit Error Rate (BER), to shed light on the prowess of 5G and its evolutionary successors. | |