



5G Mobile Communication Performance Improvement with Cooperative-NOMA Optimization

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Abstract: The 5G Mobile communication cellular networks are expanding rapidly, and with the quick development of several new services and mobile applications are anticipated consumption of frequency and the bandwidth resources in upcoming cell phone networks. Therefore, networks suffer from low speed and high latency. Corporative Non-orthogonal Multiple Access (C-NOMA) is an approach method to meet the various needs of improved user fairness, high reliability, high spectral efficiency (SE), extensive connectivity, raising data rates, high flexibility, low transmission latency, massive connectivity, low delay, higher cell-edge throughput, and superior performance. This paper mainly focuses on power-domain (PD-NOMA), which employs successive interference cancellation (SIC) at the receiver and superposition coding (SC) at the transmitter. Also, this paper compares C-NOMA, NOMA, and OMA for different types of environmental fading. This paper shows how NOMA performance can be improved when combined with numerous confirmed wireless communication network strategies, including cooperative (C-NOMA) system communications with the help of optimization. The simulation results demonstrated enhancements of cooperative (NOMA) compared to non-cooperative (NOMA) and (OMA) with the help of MATLAB and NYUSIM simulations. The results also demonstrated the improvement is valid with the increase of bandwidth frequency signal spectrum for the varying of near and far user distance.

Keywords: 5G, NOMA, Cooperative NOMA, Fading channel, mmWave, Optimization

1. INTRODUCTION

The rapid expansion of mobile cellular applications has driven the anticipated enormous improvement in data

with limited, brief messages for enormous MTC, and it must be inexpensive and energy-efficient to allow for widespread implementation [1, 2].

Determining the performance of mobile