

Title: Effect of pilot contamination in Massive MIMO system

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The massive MIMO technology uses a large number of antennas at the base station to transmit and receive signals using a Time Division Duplex (TDD) to/from users at the same time and the same frequency but with different time slot for uplink and downlink transmission. This gives a high spectral efficiency and improves reliability. In this system the channel is estimated using uplink training by sending an orthogonal pilot sequence from users to base station. The orthogonal pilot sequence is known at the base station and can be used to estimate the channel. This estimated channel is used to pre-coded data at the base station for downlink transmission. Due to the coherence time limited the orthogonal sequence are re-used either within the cell or in different cells, causing the base station to receive the same orthogonal pilot sequences which have an impact in estimating the channel. This channel estimation error is known as pilot contamination. In this paper, we analysis pilot contamination effect in massive MIMO and we observe that this pilot contamination effect limited the SINR value as the number of antennas approached to infinity, which limits the capacity of the system.

Biography

I am a 2013 graduate of Electronics and Communication Engineering from Mekelle Institute of Technology (MIT)-Mekelle University, Ethiopia and currently I am pursing master program in Electrical engineering(Telecommunication Engineering Option) at Pan African University Institute for Basic Sciences, Technology and Innovation (PAUSTI), Kenya.

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