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Signal Strength Enhancement In Tunnel Through D-MIMO

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Abstract: The capacity of Multiple Input and Multiple output(MIMO) system is reduced by lower angel propagation environment and small interelement spacing of terminals. When the channel state information is available at the transmitter, performance improvement can be achieved through a precoding operation. However because of lower angular spread in tunnels, colocated MIMO(C-MIMO) system will not perform well. The study reveals that low angular spread can be overcome by employing distributed MIMO(D-MIMO) systems. we proposed a suitable limited feedback precoding technique in particle-swarm-optimization method. After implementing this technique we compared C-MIMO, and we found that significant improvement in capacity and power distribution in D-MIMO. when Access points antennas are optimally distributed across the tunnel, or a scenario in which transmitter has some knowledge about the wireless channel