

Omni-Relay (OR) Scheme-Aided LTE-A Communication Systems

Authors : Hassan Mahasneh, Abu Sesay

Abstract : We propose the use of relay terminals at the cell edge of an LTE-based cellular system. Each relay terminal is equipped with an omni-directional antenna. We refer to this scheme as the Omni-Relay (OR) scheme. The OR scheme coordinates the inter-cell interference (ICI) stemming from adjacent cells and increases the desired signal level at cell-edge regions. To validate the performance of the OR scheme, we derive the average signal-to-interference plus noise ratio (SINR) and the average capacity and compare it with the conventional universal frequency reuse factor (UFRF). The results show that the proposed OR scheme provides higher average SINR and average capacity compared to the UFRF due to the assistance of the distributed relay nodes.

Keywords : the UFRF scheme, the OR scheme, ICI, relay terminals, SINR, spectral efficiency

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