An adaptive Compressive sensing-based channel estimation for 5G Massive MIMO Systems

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Abstract: Massive multiple-input multiple-output (MIMO) is a key technology in wireless communications to get data rates of 1000 times. Massive MIMO system has very large number of antennas at the base station (BS) operated for servicing many users at the same time. It is a promising technology for realization of high-throughput wireless communications. Massive MIMO exploits the high degree of spatial freedom so that it greatly improves the channel capacity and energy efficiency of the MIMO system. The massive MIMO systems are broadly accepted as a very important establishing technology for 5th Generation (5G) Wireless communication systems. But in massive MIMO systems, an exact determination of the channel state information (CSI)is needed for purpose of effective signal detection, resource allocation and beamforming etc. These systems having a very large number of antennas at the Base Stations, users have to estimate channels which are linked with many numbers of transmit antennas. Due to this, pilot overhead becomes very high. So, realization of the correct channel state information with a minimum pilot overhead will be a challenging issue. Simulation results implemented shows that the proposed algorithm can quickly and accurately determine massive MIMO channel of the unknown channel sparsity and with high computational efficiency when compared with other previous algorithms.