

SOURCE: University of Bristol, U.K.
Dept. of Electrical and Information Technology, Lund
University, Sweden

Temporal Analysis of Measured LOS Massive MIMO Channels with Mobility

The first measured results for massive multiple-input, multiple-output (MIMO) performance in a line-of-sight (LOS) scenario with moderate mobility are presented, with 8 users served by a 100 antenna base Station (BS) at 3.7GHz. When such a large number of channels dynamically change, the inherent propagation and processing delay has a critical relationship with the rate of change, as the use of outdated channel information can result in severe detection and precoding inaccuracies. For the downlink (DL) in particular, a time division duplex (TDD) configuration synonymous with massive MIMO deployments could mean only the uplink (UL) is usable in extreme cases. Therefore, it is of great interest to investigate the impact of mobility on massive MIMO performance and consider ways to combat the potential limitations. In a mobile scenario with moving cars and pedestrians, the correlation of the MIMO channel vector over time is inspected for vehicles moving up to 29 km/h.

Paul Harris, Steffen Malkowsky, Joao Vieira, Fredrik Tufvesson, Wael Boukley
Hasan, Liang Liu, Mark Beach, Simon Armour and Ove Edfors
Merchant Venturers Building, Woodland Road, BS81UB
Phone:
Fax:
Email: paul.harris@bristol.ac.uk