Mário Marques da Silva, Américo Correia, Rui Dinis, “On Pre-Processing for MIMO W-CDMA” – 11th International Symposium on Wireless Personal Multimedia Communications (WPMC 2008), Lapland, Finland, September 2008.

Abstract: In this paper we present and evaluate a new frequency domain approach to compute the coefficients of a pre-processing scheme for Multiple Input Multiple Output (MIMO) channels subject to frequency-selective fading.

It is assumed that the Base Station (BS) has M>=2 transmit antennas and the Mobile Station (MS) receiver has space enough to accommodate N>=2 uncorrelated receive antennas, with M>=N, which allows a MS of lower size, relating to other MIMO schemes. Furthermore, downlink transmissions are considered, within W-CDMA systems. It is shown that the proposed pre-processing scheme allows receivers with very low complexity, contrarily to the case where a post-processing approach is followed, simplifying the MS receiver and improving the performance. The proposed $M \times N$ MIMO pre-processing scheme can be seen as an alternative to post-processing schemes.