Channel Extrapolation Based on Wideband MIMO Channel Measurements

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Abstract:

This paper shows results for channel extrapolation in both spatial and frequency domain, based on real measurements in an indoor office environment. Using a network analyzer, and measurement robots with very precise movement steps, channel data over a frequency span of 50MHz has been colleted in a large spatial volume. By using some key parameters that are extracted from a subset of the data, together with a model of the channel, an extrapolated estimate of the channel at a second location is created. This estimate is then compared to the measurement that is available for the second location, which thus gives us a measure of how well channel information may be extrapolated in space and frequency. We show that by using a well assumed model of the propagation environment, we may create an extrapolated estimate of the channel for a different location, that can be used to increase various system performance measures like received power, well beyond the channel decorrelation distance.