

Measurement Based Ray Launching for Analysis of Outdoor Propagation

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Abstract:

Clustering is a key concept of existing MIMO channel models, such as the COST 2100 model. Parameter based clustering has been studied for a while, but how parameter based clusters relate to the physical environment is not well known yet. A measurement based ray launching tool is developed and used for studying clustering and its relation to physical scatterers. By using estimated angles and delays of multi-path components as input to the ray launching tool, the physical scatterers along the propagation paths are visualized. After the physical scatterers are grouped, we notice that when the receiver moves, some physical scatterers continue to contribute to the channel response while others disappear and sometimes also later re-appear as represented by the cluster life time and common clusters in the COST 2100 model. Our measurement based ray launching tool shows significant advantages for further channel analysis and modeling.