Evaluation of an Automatic Identification Algorithm for the Clustering of Radio Channels

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Abstract:

A Multipath Component Distance (MCD) based Automatic Clustering Identification algorithm (ACId-MCD) is proposed to group multipath components (MPCs) obtained from radio channels. The developed algorithm iteratively and dynamically assign the MPCs to the best cluster thanks to the MCD metric. Its performance and robustness are compared with the K-means MCD algorithm using cluster data simulated with four reference scenarios of the WINNER~\uppercase\expandafter{\romannumeral2} channel model. The results indicate that K-means MCD is outperformed for all investigated scenarios inspite a lower computational complexity and faster convergence. Moreover, a by-product of the algorithm is an optimal MCD threshold which is characteristic of the cluster statistical properties for a given propagation scenario. This parameter provides a stronger physical link between the MPCs distribution and the propagation scenario. Therefore, it could be introduced in radio channel models with cluster-like features.