Robustness of high-resolution channel parameter estimators in presence of dense multipath components

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Abstract:

The estimation accuracy of specular multipath components in radio channels that include dense multipath is investigated. Classical multipath estimation algorithms such as ESPRIT and SAGE do not include dense multipath in their signal model whereas recent ones, such as RiMAX, do. These estimation algorithms are applied to a priori known synthetic channels which include both specular components (SCs) and dense multipath components (DMCs). The estimation errors of the SCs are computed as a function of the DMC power to evaluate the estimator's robustness. The results of this work clearly indicate large estimation errors for the SC parameters when the estimator does not include DMCs in its data model.