Direct Singular Value Decomposition based Channel Modelling

Author(s) - Institution(s):
Tim W. C. Brown, UNISR
Patrick, C. F. Eggers, AAL

Corresponding author email: t.brown@surrey.ac.uk

Corresponding WG group: WG1

Abstract:

The framework and validation of novel stochastic technique is presented to directly model singular vectors and singular values of a multiple input multiple output (MIMO) channel. Thus the components modelled directly in the eigen domain can be adapted to exhibit realistic physical domain behaviour when assembled. The model creates natural paths of eigenmodes, such that a simple Doppler filter generator process can be used in the eigen domain. Furthermore, it is possible to directly manipulate the singular vector dynamics in a way that an unrealistic “stress channel” can be modelled in the eigen domain for purposes of testing channel tracking at MAC layer. This singular vector based model targets testing of the eige n domain functionality of MIMO modems/devices (i.e. an apparatus focus) without the need for including the decomposition stages.