LOW COMPLEXITY ITERATIVE METHOD OF SIGNAL DETECTION IN OFDM (TueAmOR7)

Author(s) :

Sajid Ahmed (Cardiff University, United Kingdom)
Mathini Sellathurai (Cardiff University, United Kingdom)
Sangarapillai Lambotharan (King's College London, United Kingdom)
Jonathon A. Chambers (Cardiff University, United Kingdom)

Abstract :

Orthogonal frequency division multiplexing (OFDM) is an attractive technique for transmission over frequency selective channels since it allows low complexity channel equalization at the receiver. Although in a multi−path environment an OFDM system is very robust to frequency selective fading, it is sensitive to time selective fading characteristics of the mobile channel. Time selectivity of the channel causes inter−carrier interference (ICI) in OFDM, thereby degrading the system performance significantly and increasing the computational complexity of the receiver. On the other hand, time selectivity introduces temporal diversity that can be exploited to improve the performance. In this work, a new method is addressed to compensate for the effects of time selectivity of the channel that exploits the sparsity present in the channel convolution matrix. Here, working with time and frequency domain samples, a low complexity iterative algorithm is proposed.
[continued on the next page]

LOW COMPLEXITY ITERATIVE METHOD OF SIGNAL DETECTION IN OFDM (TueAmOR7)

* Author(s) :	Sajid Ahmed	(Cardiff University, United Kingdom)
	Mathini Sellathurai	(Cardiff University, United Kingdom)
	Sangarapillai Lambotharan	(King's College London, United Kingdom)
	Jonathon A. Chambers	(Cardiff University, United Kingdom)

* Abstract : (cont.)	Simulation results show the superior performance over the standard linear minimum mean square error (MMSE) equalizer with the advantage of computational saving and temporal diversity gain.