Tracking Analysis Of Normalized Adaptive Algorithms

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Summary

Tracking analysis of normalized adaptive algorithms is carried out in the presence of two sources of nonstationarities: carrier frequency offset between transmitter and receiver; random variations in the environment. A unified approach is carried out using a mixed-norm-type error nonlinearity. Close agreement between analytical analysis and simulation results is obtained for the case of the NLMS algorithm. The results show that, unlike the stationary case, the steady-state excess-mean-square error is not a monotonically increasing function of the step-size, while the ability of the adaptive algorithm to track the variations in the environment degrades by increasing the frequency offset.