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A Multi-user Detection Scheme For Chaotic-Based Wireless Communication Systems Using Adaptive Filters And Regression Methods

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Abstract: Recently, Chaos theory has been a very useful tool in communications, the chaotic modulation, called Chaotic Shift Keying (CSK), is used in multiuser scenarios. In this paper, the performance analysis of a chaotic-based communication system is investigated under the effect of Nakagami-fading and AWGN, a model for both transmitter and receiver is established, Spread Spectrum techniques are used, and two different methodologies of detection are proposed. The first detection method is based on adaptive filters with the usage of LMS concept, the second method uses regression method. A comparison of the performance of these detection methods is done, showing the effect of fading and multiuser estimation error.