On the Higher Order Statistics of the Channel Capacity in Dispersed Spectrum Cognitive Radio Systems Over Generalized Fading Channels

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Abstract

This work is devoted to the study of dispersed spectrum cognitive radio (CR) systems over independent and nonidentically distributed (i.n.i.d.) generalized fading channels. More specifically, this is performed in terms of the high-order statistics (HOS) of the channel capacity over η-μ fading channels. A generic analytic expression is derived for the corresponding nth statistical moment, which is subsequently employed for deducing exact closed-form expressions for the first four moments. Using these expressions, important statistical metrics, such as the amount of dispersion, amount of fading, skewness, and kurtosis, are derived in closed form and can be efficiently used in providing insights on the performance of dispersed CR systems. The obtained numerical results reveal interesting outcomes that could be useful for the channel selection, either for sharing or aggregation in heterogeneous networks, which is the core structure of future wireless communication systems.

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