MC-CDMA系統工作於具多蜂巢FBS環境與衰落通道之研究

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摘 要

本論文旨在研究多蜂巢多載波分碼多重近接(MC-CDMA)蜂巢式系統結合等增益(equal gain combining, EGC) 合成方式，工作於具多蜂巢遠處基地台(further base station, FBS)環境與相關衰落通道上之研究。本文中得到一個含有一般式的Laguerre多項式和MC-CDMA 系統平均位元錯誤率 (bit error rate, BER)，而且具任意相關係數之分集結合器的新聯合機率密度函數的封閉形式方程式。結果證明BER取決於多蜂巢環境之分集分支相關特性，而且其受到分支的相關影響十分明顯。

關鍵詞 : 一般Laguerre多項式、多蜂巢無線通訊系統、相關Nakagami-m分布、MC-CDMA系統

目錄

參考文獻

[1] R. Price and P. E. Green,“ A Communication Technique for Multipath Channels ”, Proceeding of the IRE, Vol. 46, pp. 555-570, 1958.
[2] P. Lombardo et al.,“ MRC Performance for Binary Signals in Nakagami Fading with General Branch Correlation ”, IEEE Trans. on Commun., Vol. 47, No. 1, pp. 44-52, 1999.
[3] B. Natarajan et. al.,“ Generation of correlated Rayleigh Fading Envelope for Spread Spectrum Applications ”, IEEE Commun. Letters, Vol. 4, No. 1, pp. 9-11, 2000.
[4] M. Nakagami, The m-distribution-A General Formula of Intensity Ddistribution of Rapid Fading, in Statistical Methods in Radio Wave Propagation. Oxford, U.K.: Permagon, pp. 3-36, 1960.
[5] V. A. Aalo,“ Performance of Maximal-ratio Diversity Systems in a Correlated Nakagami-fading Environment ”, IEEE Trans. on Commun., Vol. 43, pp. 2360-2369, 1995.
[6] Q. T. Zhang,“ Maximal-ratio Combining over Nakagami Fading Channels with an Arbitrary Branch Covariance Matrix ”, IEEE Trans. on Vehic. Technol., Vol. 48, No. 4, pp. 1142-1149, 1999.
[7] F. Patenaude, J. H. Lodge, and J. Chouinard,“ Noncoherent diversity reception over Nakagami-fading channels ”, IEEE Trans. on Commun., Vol. 46, No. 8, pp. 985-991, 1998.
[8] N. H. L. Chan and P. T. Mathiopoulos,“ Efficient Video Transmission over Correlated Nakagami Fading Channels for IS-95 CDMA Systems ”, IEEE J. select. Area Commun., Vol. 18, No. 6, pp. 996-1011, 2000.
[9] Emad K. Al-Hussaini and Iman M. Sayed,“ Selection and MRC Diversity for a DS/CDMA Mobile Radio System through Nakagami Fading Channel ”, Wireless Personal Communications, Vol. 16, pp. 115-133, 2001.
[10] Yawpo Yang, Joy I. Z. Chen, and J. C. Liu,“ Performance Analysis of DS-CDMA System over Correlated Nakagami Fading Channel ”, J. Chung Cheng Inst. of Technol., Vol. 30, No. 1, pp. 143-158, 2001.
[11] Q. T. Zhang,“ A Generic Correlated Nakagami Fading Model for Wireless Communications ”, IEEE Trans. on Commun., Vol. 51, no. 11, pp. 1745-1748, 2003.
[12] N. Eng and L. B. Milstein,“ Coherent DS-CDMA Performance in Nakagami Multipath Fading ”, IEEE Trans. on Commun., Com-43, pp. 1134-1143, 1995.
[13] W. C. Y. Lee,“ Effect of Correlation Between Ttwo Mobile Radio Base-station Antennas ”, IEEE Trans. on Commun. Com-21, pp. 1214-1224, 1973.
[14] M. S. Alouini and A. Goldsmith,“ A Unified Approach for Calculating the Error Rates of Linearly Modulated Signals over Generalized Fading Channels ”, Proc. IEEE Int. Conf. Commun. ICC ’98, Atlanta, GA, pp. 459-464, 1998.
[15] A. S. Krishnamoorthy and M. Parthasarathy,“ A Multivariate Gamma-type Distribution ”, Annals Math. Statist., Vol. 22, pp. 549-557, 1951.
[16] H. Buchholz, The Confluent Hypergeometric Function, Springer-verlag Berlin Heidelberg N. Y., Chapter IV, pp. 90-132, 1969.
[17] M. H. Fong, V. K. Bhargava, and Q. Wang,“ Concatenated Orthogonal/PN Spreading Sequences and Their Application to a Cellular DS-CDMA System with Integrated Traffic ”, IEEE J. Select. Areas Commun., Vol. 14, No. 3, pp. 547-558, 1996.