雙層毫微微蜂巢系統中斷話率與干擾迴避之研究

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摘 要

本論文的目的是分析一個多載波分碼多重存取系統(multi-carrier coded-division multiple-access system, MC-CDMA)操作在兩層毫微微蜂巢(femtocell)環境之上的系統效能，其中考慮的方案是部署一個巨大蜂巢(macrocell)的位置，在巨大蜂巢周圍設置一些毫微微蜂巢，其設計是，服務於一群認購者設置在一小型覆蓋面積，例如，小型咖啡廳、家用辦公室、或一個家庭。通常，這毫微微蜂巢是被應用於服務室內認購者，因此瑞雷衰落是被採用描述傳送者之間的傳播通道特性。對於任意使用者在這熱點(這地區是第0層的毫微微蜂巢)，跳時分碼多重存取(time-hopped coded-division multiple access, TH-CDMA)的科技將支援傳輸任一符元在一般的時槽。本論文的分布是在位元錯誤率根據重要的參數預估系統效能，例如，交談中的使用者數量、藉由跳時分碼多重存取系統提供的跳槽數量，和次載波的數量。

關鍵詞 : 跳時分碼多重存取、熱點、毫微微蜂巢、巨大蜂巢、多載波分碼多重存取、瑞雷衰落

目錄

參考文獻

[1] V. Chandrasekhar, and J. G. Andrews, ” Uplink Capacity and Interference Avoidance for Two-Tier Femtocell Networks, ” IEEE Trans. On Wireless Commun, Vol.8, No. 7, pp. 3498 - 3509, July 2009.

[2] S. K. Mem, L. J. Greenstein, H. V. Poor, and S. C. Schwartz, “ Uplink User Capacity in a Multicell CDMA System with Hotspot Microcells, ” IEEE Trans. On Wireless Commun, Vol. 5, No. 6, pp. 1333-1341, June 2006.

[3]H. -S. Jo, S. Member, C. Mun, Lee, J. Moon, and J. – G Yook, ” Interference Mitigation Using Uplink Power Control for Two-Tier Femtocell Network, ” IEEE Trans. On Wireless Commun, Vol. 8, No. 10, pp. 4906-4910, Oct. 2009.

[4] V. Chandrasekhar, and J. G. Andrews, ” Femtocell Networks: A Survey, ” IEEE Commun. Magazine, Vol. 46, No. 9, pp. 59-67, Sep. 2009.

[5] N. Yee, Jean-Paul M.G. Linnart, and G. Fettweis, ” Multi-Carrier CDMA in Indoor Wireless Radio Networks, ” IEICE Trans. Commun, Vol. E77-B, No. 7, pp. 900-904, July 1994.

[6] S. -P. Yeh, S. Taluar, Sa-Co, Lee, and H. Kim, ” WiMAX Femtocells: A Perspective on Network. Architecture, Capacity, and Coverage, ” IEEE Commun. Magazine, Vol. 46, No. 10, pp. 58-65, Oct. 2008.

[7] V. Chandrasekhar, and J. G. Andrews, ” Spectrum Allocation in Tiered Cellular Networks, ” IEEE Trans. On Commun, Vol. 57, No. 10, pp. 3059 - 3068, Oct. 2009.

[8] G. L. Stuber. ” Principles of mobile Communication ”, Kluwer Academic Publishers, Massachusetts, 1996.

[9] J. Reig and N. Cardona, “ Approximation of outage probability on Nakamagi fading channels with multiple interfers ”, Electronics Letters, Vol. 36, No. 19, Sep. 2000.

[10] Y. D Yao, and Sheikh, A. U. H., ” Outage probability analysis for microcellular mobile radio systems with co-channel interferers in Rician/Rayleigh fading environment ” , Electronic letters, Vol. 26, No.13, pp. 864-866, June 1990.
[11] RappaportT. S., ” Wireless communication principles & practice ” , Prentice Hall PTR Upper Saddle River, New, Jersey,1996.
[12] S. Abbas, and A. U. Sheikh , ” Radio link performance on frequency selective Nakagami fading co-channel interference “ , IEEE 49th Vehicular. Tech. Conf., Vol. 3, pp. 1989 – 1993, 1999.
[13] M.-S. Alouini & M. K. Simon, ” Performance of generalized selection combining over Weibull fading channels “ , IEEE VTS 54th, Vehicular Technology Conference, Vol. 3, pp. 1735 – 1739, Oct. 2001.
[14] A. D. Adnan, and N. C. Beaulieu, “ Outage probabilities of cellular mobile radio systems with multiple Nakagami interferers ” , IEEE Trans. on Veh. Tech., Vol. 4, pp. 757-768. 1991.
[15] S. Abbas, and A. U. Sheikh , ” Radio link performance on frequency selective Nakagami fading co-channel interference “ , IEEE 49th Vehicular. Tech. Conf., Vol. 3, pp. 1989 – 1993, 1999.
[16] Nakagami, N.: ‘ The m-distribution: a general formula for intensity distribution of rapid fading ’ in HOFFMAN, W.G. (Ed.): ‘ Statistical methods in radio wave propagation ’ (Pergamon, Oxford, UK, 1960), pp. 3-36.
[17] Y. D. Yao, and A.U. H, Sheikh, ” Co-channel interference modeling and performance analysis of microcell systems for wireless personal communications ” , Canadian Journal of electrical and computer engineering, Vol. 19, No.1, pp.27-35, 1994.
[18] T. E. Klein and S. -J Han, ” Assignment Strategies for Mobile Data Users in Hierarchical Overlay Networks: Performance of Optimal and Adaptive Strategies , ” IEEE J. Select. Area Commun. Vol. 22, No. 5, pp. 849-861, June 2004.
[19] S. Kishore, L. J. Greenstein, H. V. Poor and S. C. Schwartz , ” Soft Hand Off and Uplink Capacity in a Two-tier CDMA System, ” IEEE Trans. on Wireless Commun., Vol. 4, No. 4, pp. 1297-1301, July 2005.
[20] V. Chandrasekhar, J. G. Andrews, and A. Gatherer, ” Uplink Capacity and Interference Avoidance for Two-Tier Femtocell Networks, ” IEEE Trans. on Wireless Commun., Vol. 8, No. 7, pp.1-12, July 2009.
[21] V. Chandrasekhar, J. G. Andrews, and A. Gatherer, ” Coverage in Multi-Antenna Two-tier Networks, ” IEEE Trans. on Wireless Commun., Vol. 8, No. 10, pp. 5314-5327, Oct. 2009.
[22] H. C. Claussen, L. T. W. Ho, L. G. Samual, ” Self-optimization of Coverage for Femtocell Deployments, ” Wireless Telecomunications Symposium, 2008. WTS, pp. 278-285, April 2008.
[23] S. Kishore, L. J. Greenstein, H. V. Poor, and S. C. Schwartz, “ Soft-handoff and Uplink Capacity in a Two-tier CDMA System, ” IEEE Trans.Wireless Commun., Vol. 4, No. 4, pp. 1296-1301, July 2005.
[24] V. Chandrasekhar, J. G. Andrews, and A. Gatherer, ” Power Control in Two-tier Femtocell Networks, ” To Appear, IEEE Trans. on Wireless Commun., Vol. 8, issue 8, pp. 4316-4328, Aug. 2009.
[25] A. Ghasemi, and E. Sousa, “ Spectrum Sensing in Cognitive Radio Networks: The Cooperation-Processing Tradeoff, ” Wireless Commun. Mob. Comput., Vol. 7, No. 9, pp. 1049-1060, Nov. 2007.
[26] L. Qian, X. Li, J. Attia, and Z. Gajic, “ Power Control for Cognitive Radio Ad hoc Networks, ” in Proc. IEEE Workshop on Local & Metro. Area Networks, pp. 7-12, June 2007.
[27] A. M. Hunter, J. G. Andrews, and S. Weber, “ Transmission Capacity of Ad hoc Network with Spatial Diversity, ” IEEE Trans. on Commun., Vol. 7, No. 12, pp. 5058-5071, Dec. 2008.
[28] Joy Iong-Zong Chen, “ Performance Analysis for an MC-CDMA System over Single- and Multiple-Cell Environments in Correlated-Nakagami-m Fading, ” IEICE Transaction on Commun., Vol. E90-B, No. 7, pp. 1713-1724, July 2007.
[29] M. K. Simon, M. S. Alouini, “ A unified approach to the performance analysis of digital communication over generalized fading channel, ” Proc. of the IEEE, vol. 86, pp. 1860-1877, 1998.
[30] L. L. Chong, L. B. Milstein , “ Error rate of a multicarrier CDMA system with imperfect channel estimates, ” IEEE International Conference on Commun, vol. 2, pp. 934-938, 2000.