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Performance analysis of spectrum sensing methods: A numerical approach

(Conference Paper)

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Abstract

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Recent enhancement of Long Term Evolution / Advanced (LTE/LTE-A) is aimed to increase the throughput of the Orthogonal Frequency Division Multiplexing (OFDM) system. This is quite obvious where both frequency and time division are employed in order to augment the system capacity. In LTE/LTE-A heterogeneous Networks (Het Nets), femto cells (He Node Bs) are the optimal choice to extend the coverage within indoor environment. Nonetheless, the deployment of such base stations, somewhat to certain extent, does create cross-tier and co-tier interferences with the macro cell users ($UE_{macro-eNB}$) that ostensibly can become a critical challenge. It is implied that the unutilized / idle spectrums reallocation might be one of the solutions to mitigate such challenge. However, the errorless spectrum sensing does pose another issue. This paper outlines the investigation findings where spectrum sensing techniques is deployed to maximize the spectrum detection capacity with minimum error in OFDM based Het Nets. In addition, in the attempt to increase the efficiency of spectrum resources, this paper proposes a sensing technique which is imposed over advanced energy detection technique to detect the idle spectrums. The result of the proposed scheme is evaluated using Monte Carlo simulation. © 2014 IEEE.

Author keywords

Error Optimiation HetNeT Spectrum

Indexed keywords

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 Long Term Evolution (LTE) Macros Monte Carlo methods Numerical methods
 Standards Wireless telecommunication systems

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- 1 Haykin, S.
 Cognitive radio: Brain-empowered wireless communications
 (2005) *IEEE Journal on Selected Areas in Communications*, 23 (2), pp. 201-220. Cited 7998 times.
 doi: 10.1109/JNSAC.2004.839380
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- 2 Choi, Y., Lee, Y., Cioffi, J.M.
 Optimization of cooperative inter-operability in heterogeneous networks with cognitive ability
 (2011) *IEEE Communications Letters*, 15 (11), art. no. 6029941, pp. 1178-1180. Cited 20 times.
 doi: 10.1109/LCOMM.2011.092011.111099
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- 3 Miao, J., Hu, Z., Yang, K., Wang, C., Tian, H.
 Joint power and bandwidth allocation algorithm with QoS support in heterogeneous wireless networks
 (2012) *IEEE Communications Letters*, 16 (4), art. no. 6168145, pp. 479-481. Cited 38 times.
 doi: 10.1109/LCOMM.2012.030512.112304
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-
- 4 Ismail, M., Zhuang, W.
Decentralized radio resource allocation for single-network and multi-homing services in cooperative heterogeneous wireless access medium

(2012) *IEEE Transactions on Wireless Communications*, 11 (11), art. no. 6314473, pp. 4085-4095. Cited 25 times.
doi: 10.1109/TWC.2012.091812.120329

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-
- 5 Choi, Y., Kim, H., Han, S.-W., Han, Y.
Joint resource allocation for parallel multi-radio access in heterogeneous wireless networks

(2010) *IEEE Transactions on Wireless Communications*, 9 (11), art. no. 5626933, pp. 3324-3329. Cited 106 times.
doi: 10.1109/TWC.2010.11.100045

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-
- 6 CHEN, X., BIE, Z.-s., WU, W.-l.
Detection efficiency of cooperative spectrum sensing in cognitive radio network

(2008) *Journal of China Universities of Posts and Telecommunications*, 15 (3), pp. 1-7. Cited 19 times.
doi: 10.1016/S1005-8885(08)60098-9

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-
- 7 Ma, J., Zhao, G., Li, Y.
Soft combination and detection for cooperative spectrum sensing in cognitive radio networks

(2008) *IEEE Transactions on Wireless Communications*, 7 (11), art. no. 4686831, pp. 4502-4507. Cited 448 times.
doi: 10.1109/T-WC.2008.070941

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-
- 8 Liang, Y.-C., Zeng, Y., Peh, E.C.Y., Hoang, A.T.
Sensing-throughput tradeoff for cognitive radio networks

(2008) *IEEE Transactions on Wireless Communications*, 7 (4), art. no. 4489760, pp. 1326-1337. Cited 1757 times.
doi: 10.1109/TWC.2008.060869

[View at Publisher](#)
-
- 9 Mokhtar, R., Noordin, N., Ali, B.M., Ramli, A., Abdalla, Y.
Cooperative spectrum sensing with distributed detection threshold

(2010) *Proceedings - 2nd International Conference on Network Applications, Protocols and Services, NETAPPS 2010*, art. no. 5635809, pp. 176-181. Cited 5 times.
ISBN: 978-076954177-8
doi: 10.1109/NETAPPS.2010.38

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-

-
- 10 Luo, J., Wang, J., Li, Q., Wu, C., Li, S.
Normalized energy detection based cooperative spectrum sensing with reporting errors in heterogeneous cognitive radio networks

(2013) *IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC*, art. no. 6666235, pp. 745-749. Cited 2 times.
ISBN: 978-146736235-1
doi: 10.1109/PIMRC.2013.6666235

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-
- 11 Ejaz, W., ul Hasan, N., Kim, H.S.
SNR-based adaptive spectrum sensing for cognitive radio networks

(2012) *International Journal of Innovative Computing, Information and Control*, 8 (9), pp. 6095-6105. Cited 28 times.
-
- 12 Chen, F., Xu, W., Guo, Y., Lin, J., Chen, M.
Resource allocation in OFDM-based heterogeneous cognitive radio networks with imperfect spectrum sensing and guaranteed QoS

(2013) *2013 8th International ICST Conference on Communications and Networking in China, CHINACOM 2013 - Proceedings*, art. no. 6694563, pp. 46-51. Cited 9 times.
ISBN: 978-147991406-7
doi: 10.1109/ChinaCom.2013.6694563

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-
- 13 Cheung, W.C., Quek, T.Q.S., Kountouris, M.
Throughput optimization, spectrum allocation, and access control in two-tier femtocell networks

(2012) *IEEE Journal on Selected Areas in Communications*, 30 (3), art. no. 6171997, pp. 561-574. Cited 246 times.
doi: 10.1109/JSA.2012.120406

[View at Publisher](#)
-
- 14 Yücek, T., Arslan, H.
A survey of spectrum sensing algorithms for cognitive radio applications

(2009) *IEEE Communications Surveys and Tutorials*, 11 (1), pp. 116-130. Cited 2567 times.
doi: 10.1109/SURV.2009.090109

[View at Publisher](#)
-
- 15 Chandrasekhar, V., Andrews, J.G.
Uplink capacity and interference avoidance for two-tier femtocell networks

(2009) *IEEE Transactions on Wireless Communications*, 8 (7), pp. 3498-3509. Cited 362 times.
doi: 10.1109/TWC.2009.070475

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