

寬頻行動通訊實驗室

Broadband Mobile Communication Laboratory

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研究領域

- ◆ 5G通訊技術
- ◆ 感知無線電及階層式蜂巢網路
- ◆ 綠能無線通訊
- ◆ 機器學習及最佳化於無線通訊應用
- ◆ 獵能無線通訊
- ◆ 無人機通訊
- ◆ 5G communication technology
- ◆ Cognitive radio and hierarchical cellular systems
- ◆ Green communications
- ◆ Optimization for machine learning in communications
- ◆ Energy harvesting communications
- ◆ Unmanned aerial vehicle communications

近期研究成果

◆ 下世代無線通訊網路干擾抑制與管理技術

研究在大細胞下佈置具無線充電功能之裝置間通訊與蜂巢用戶的共存問題，聯合設計天線波束形成、時間分配、裝置傳輸功率控制以有效管理蜂巢細胞與裝置間通訊的干擾問題。

◆ 綠能無線通訊傳輸技術

研究應用於多用戶多天線多載波中繼網路（此為第四/五代無線通訊重要網路架構之一）的用戶傳輸功率分配技術，研究代價設定對於頻寬使用效率與功率使用效率影響，提出代價迭代方式以最大化每單位能量可傳輸資料位元數，同時確保多用戶整體資料傳輸速率，設計多用戶綠能功率分配演算法。

◆ 獵能無線通訊傳輸技術

能量獵取技術近年來發展快速，然而太陽能無線通訊面臨最大挑戰為能量獵取過程零星且隨機的特性造成能量獲取不確定性，在有限的電池容量情形下能源的排程管理更顯得重要。研究以太陽能量測資料為導向之最佳傳輸功率與調變方法，透過馬克夫決策程序設計能依據不同通道、電池及太陽能狀態即時自適應性調整通訊傳輸參數的傳輸策略。

Research Project

- ◆ Deep Learning for Green Wireless Communications: Power Control and Optimization
(MOST 108-2221-E-008-018-) 2019.08.01-2020.07.31
- ◆ Exploiting Self-Interference in Full-Duplex Relay Communications: Signal Decoding and Energy Harvesting
(MOST 107-2221-E-008-027-) 2018.08.01-2019.07.31
- ◆ Beamforming and Resource Management for Wireless-Powered Communications with Channel Uncertainty
(MOST 106-2221-E-008-014-) 2017.08.01-2018.07.31

Selected Publications

- ◆ Meng-Lin Ku* and Jyun-Wei Lai, "Joint Beamforming and Resource Allocation for Wireless-Powered Device-to-Device Communications in Cellular Networks," IEEE Transactions on Wireless Communications, Vol. 16, No. 11, pp. 7290-7304, Nov. 2017. (SCI, IF=5.888)
- ◆ Keshav Singh and Meng-Lin Ku*, "Toward Green Power Allocation in Relay-Assisted Multiuser Networks: A Pricing-Based Approach," IEEE Transactions on Wireless Communications, Vol. 14, No. 5, pp. 2470-2486, May 2015. (SCI, IF=5.888)
- ◆ Wei Li*, Meng-Lin Ku, Yan Chen and K. J. Ray Liu, "Performance Analysis for Two-Way Network-Coded Dual-Relay Networks with Stochastic Energy Harvesting," IEEE Transactions on Wireless Communications, Vol. 16, No. 9, pp. 5747-5761, Sep. 2017.



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