THE UNIVERSITY   **OF HONG KONG**

Department of Mathematics

C O L L O Q U I U M

and

Operations Research Group Seminar (ORG)

April 16, 2009 (Thursday)

4:00 – 5:00pm

Room 101, Eliot Hall, HKU

Spectrum Management Based on Competitive Economy Equilibrium

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Abstract

Consider a competitive "spectrum economy" in communication system where multiple users share a common frequency band and each of them, equipped with an endowed "monetary" budget, will "purchase" its own transmit power spectra (taking others as given) in maximizing its Shannon utility or pay-off function that includes the effects of interference and subjects to its budget constraint. A market equilibrium is a price spectra and a frequency power allocation that independently and simultaneously maximizes each user's utility. Furthermore, under equilibrium the market clears, meaning that the total power demand equals the power supply for every user and every frequency. We prove that such an equilibrium always exists for the problem, and, under a weak-interference condition, the equilibrium can be computed in polynomial time. This model may lead to an efficient mechanism and a decentralized method for spectrum allocation and optimization in achieving both higher social utilization and better individual satisfaction.

All are Welcome

For further information, please contact org@maths.hku.hk *or visit*
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