École d’été RESCOM 2014

On Estimating the End-to-End Bandwidth in Multi-Transceiver Multi-Hop Cognitive Radio Networks

Guillaume Artero Gallardo    Gentian Jakllari
Lucile Canourgues    André-Luc Beylot

May 13, 2014
Emergence of Cognitive Radio networks

1. Software Defined Radio technologies
2. Increasing demand for wireless capacity
Cognitive Radio principle

- Fixed Spectrum Allocation $\Rightarrow$ **Dynamic Spectrum Access**
- Opportunistic Spectrum Access based on Spectrum Sensing result
Available end-to-end bandwidth estimation in TDMA-based multi-transceiver multi-hop cognitive radio networks
Cognitive Radio network characteristics

- Intra-path interferences
- TDMA access with Randomized slot scheduling

Main Contribution

⇒ Centralized Exponential Time to Distributed Linear Time algorithm
**FIGURE 1:** Numerical verification for $\mu = 10\%$ of the correctness of the algorithm for computing the average throughput.
**Figure 2**: Admission control performance for the case of $u = 10\%$ after only 10 numerical experiments.
**Figure 3:** Evaluation of both PU activity and multi-rates effects for the cases of $u = 20\%$. 
Questions ?