

Khatiri Mohammed

**Ordonnancement des tâches
sur systèmes multi-coeurs
hétérogènes**

Thèse en Co-tutelle

France-UGA : Denis Trystram

Maroc-OUJDA : El Mostafa Daoudi

Work Stealing With Communication

[1] - M. Tchiboukdjian et All

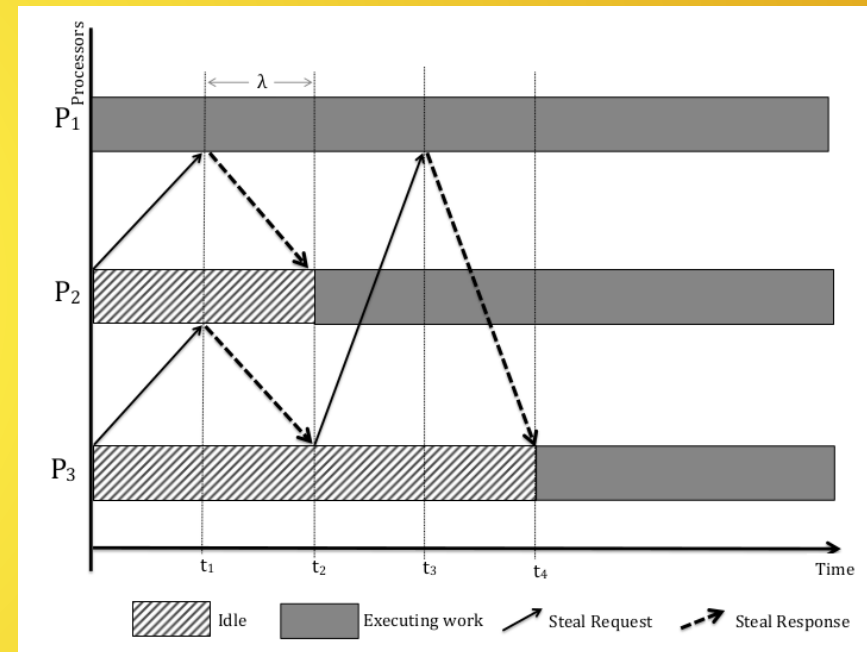
- Without communication :

$$E(C_{\max}) = \frac{W}{p} + c \cdot \log_2(W) + \Theta(1)$$

Our Result : Nicola, Denis and Frederic
(submitted in TOPC journal)

- With communication (Latency : λ) :

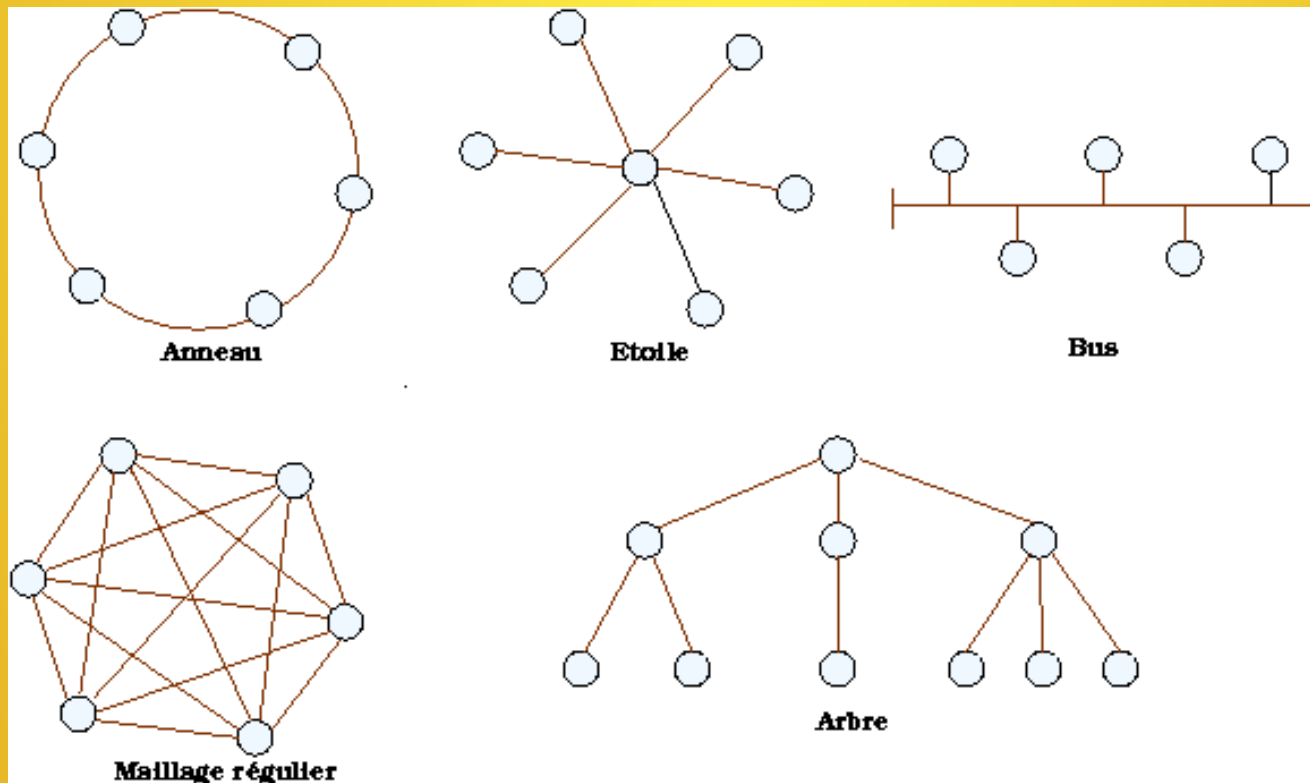
$$E(C_{\max}) = \frac{W}{p} + 2\lambda \cdot c' \cdot \log_2\left(\frac{W}{2\lambda}\right)$$



Work Stealing With Communication

This work forms the basis of incoming studies on more complex hierarchical topologies :

- Communication cost inside clusters is small
- Communication cost outside clusters is important



A dynamic load balancing problem in graph algorithms on GPUs (PageRank)

Current work with Erik Saul (UNCC charlotte US) and Denis :

- **Work Stealing on GPUs :**
 - Put all tasks on different GPUs.
 - Work Stealing on GPUs using the indices instead of tasks.
 - PageRank as a problem (product Matrix Vector)