



# Stability Properties of Linear File-Sharing Networks

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► **To cite this version:**

Florian Simatos. Stability Properties of Linear File-Sharing Networks. Journées MAS et Journée en l'honneur de Jacques Neveu, Aug 2010, Talence, France. <inria-00510296>

**HAL Id: inria-00510296**

**<https://hal.inria.fr/inria-00510296>**

Submitted on 17 Aug 2010

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Journées MAS 2010, Bordeaux

Session : Processus stochastiques en temps long

## **Stability Properties of Linear File-Sharing Networks**

par **Florian Simatos**

File-sharing networks are distributed systems used to disseminate files among a subset of the nodes of the Internet. A file is split into several pieces called chunks, the general simple principle is that once a node of the system has retrieved a chunk, it may become a server for this chunk. A stochastic model is considered, and one investigates the conditions under which the Markov process describing this network is ergodic. Compared to classical stochastic networks, this model is difficult to analyze because the capacity of the system is a function of the state of the system and thus evolves randomly over time. Technical estimates related to the survival of interacting branching processes are key ingredients to establish the stability of these systems. In this talk I will present the simplest case that highlights these difficulties.

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