Pilot-aided carrier synchronization using an approximate DCT-based phase noise model

Jabran Bhatti
Supervisor(s): Marc Moeneclaey

In digital communications, the receiver usually has to estimate some channel parameters before the useful data can be detected. In this contribution we concentrate on the recovery of the time-varying carrier phase of the received signal. More specifically, we present an algorithm for phase noise estimation from pilot symbols. The phase noise process is approximated by a Discrete Cosine Transform (DCT) basis expansion containing only a few terms. We demonstrate that the resulting mean square estimation error consists of a contribution from the additive noise, that equals the Cramer-Rao lower bound, and a noise-independent contribution that results from the phase noise modeling error. Performance can be optimized by a proper selection of the symbol block length and of the number of DCT coefficients to be estimated. For large block sizes, considerable performance improvement is found as compared to the case where only the time-average of the carrier phase is estimated.

Game Theoretic Analysis of a Fibre to the Home (FttH) Rollout in Ghent

Koen Casier, Bart Lannoo, Jan Van Ooteghem and Sofie Verbrugge
Supervisor(s): Mario Pickavet

Most of the current telecom operators choose to upgrade their existing network infrastructure as long as possible instead of introducing Fiber to the Home. On the other hand, several municipalities are more and more interested in rolling out such future proof networks as it also leads to indirect revenues (higher visibility, attracting high-tech companies...). Such a move puts them into direct competition with the existing operators and their best rollout strategy will also depend on the strategy taken by these operators. In this paper we model the interaction between a municipality rollout and an existing HFC network operator in Ghent. We show how static games can be used for deducing typical trends. Multi-stage games are required to obtain a more detailed strategy. Results show how a municipality FTTH rollout can drive the existing operators into a more aggressive competition and that FTTH will favor industrial sites and highly populated areas.
8e UGent - FirW
DOCTORAATSSYMPOSIUM

woensdag 5 december 2007 | 14h00 | Het Pand | Onderbergen 1 | 9000 Gent