MASTER THESIS – PROPERTY ASSIGNMENT IN CELLULAR NETWORKS

Background
Planning of cellular networks includes assignment of properties to each cell. These properties are in some cases limited and therefore have to be reused. Some examples on limited properties are Physical Cell Id (PCI), that is essential for mobility reasons and Random Access Root Sequences which is essential for a cell phone’s initial network access.

Since both PCI and Random Access Root Sequences are limited resources, a network has to be carefully planned when assigning these properties to the network cells. Today’s networks are also becoming more and more dense, which results in increasing demands for automation and algorithms for assigning these properties to different cells. Due to the fact of reusing these properties, it is essential to follow certain planning rules in order to keep good network performance.

Thesis Description
This thesis will focus on evaluation of known methods for assigning properties to different cells in the network. The following steps are envisioned as part of the thesis work:

- Formulate the assignment problem as a general mathematical problem
- Investigate and compare methods on the general problem and how they apply to the specific assignment problem

Qualifications
Valuable skills are for example

- Analytic and Mathematical skills (Optimization, Set theory, graph theory)
- Knowledge in simulations with MATLAB or similar.
- Telecommunication, wireless communication and cellular networks
- Good communication skills in English

Extent
1 student, 30hp

Location
Linköping, Östergötland, SE

Preferred Starting Date
January/February 2016

Keywords
Mobile Telecommunication, Optimization, Matlab, Mathematics

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