

# Modeling and Analysis of the Dynamic Location Registration and Paging in Microcellular System

Seok J. Kim and Chae Y. Lee

Dept. of Management Science, KAIST, 373-1 Kusung-Dong, Taejon, KOREA

## Abstract

A 0-1 integer programming model is considered to determine the most appropriate dynamic location registration (LR) area of each subscriber in microcellular systems. The minimization model of the LR area updating and paging signal costs is examined. The model is based on the subscriber characteristics such as the call arrival rate and the velocity as well as the regional information. The control channel blocking probabilities are considered as constraints to meet the service level of subscribers. A dynamic scheme which adaptively updates the size and shape of the LR area is developed by solving the minimization problem. Paging and location updating procedures are presented based on the dynamic procedure. The superiority of the proposed scheme is demonstrated with various computational results.