

# A Finite-Source Queuing Model for Spectrum Renting in Mobile Cellular Networks

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## Abstract

Nowadays, spectrum renting is a frequently investigated research topic with the aim of improving the efficiency of spectrum usage in mobile cellular networks.

In this paper, we propose a finite-source queuing model, in which service providers may rent each other's unutilized frequency bands. Our model contains two source pools: one for subscribers generating fresh calls in the investigated mobile cell, and another for modeling handover calls. The model considers the traveling of subscribers over the borders of the investigated mobile cell, too. Moreover, we take into account the retrial phenomenon caused by the impatience of subscribers.

## Index Terms

spectrum renting, finite-source, retrial queues, handover, impatience;

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