

# **FACTORIAL APPROACH FOR THE STUDY OF THE INFINITE SERVER QUEUE WITH SYNCHRONIZED RENEGING**

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The effect of renegeing (or customers' abandonments) has received considerable attention from the first years of Queueing Theory. In the classical models, it is assumed that each customer sets his own patience time upon arrival to a system and he abandons it prematurely if this time expires before he has initiated (or completed) its service time. In recent papers, several authors have considered other kinds of renegeing, among them the so-called synchronized abandonments that occur when the customers decide concurrently but independently, at given opportunities, whether they will abandon the system or not.

The tractability of models with abandonments is limited, even in the Markovian framework. There are several studies for models with the usual (independent) abandonments and a few studies for models with synchronized abandonments that yield closed-form expressions for some stationary performance measures. We present a new methodological approach for the study of models combining both linear (due to infinite servers) and binomial transitions (arising from synchronized abandonments). We show the path for the stationary and transient analysis of these model and we discuss extensions and generalizations.