

The Regenerative Structure of the Stationarily Periodic One Server Queue and Some of Its Consequences

D. Merad

Faculté de Mathématiques, USTHB, BP 32 El Alia, Bab Ezzouar, Algeria

Email Address: merad_djenat@yahoo.fr

Abstract

The goal of this paper is to give statistical estimates of the parameters of a stationarily periodic one server queue. We investigate the regenerative structure of a general periodic arrival and general periodic service queue. We derive the explicit expressions for the distributions and moments of the workload, waiting time and queue length processes in the stationarily periodic state and we extend Takàcs and Little's formulas to our case.

Keywords: Birkoff theorem, convergence in total variation, key renewal theorem, point process, regenerative process, stationary one server queue, stationarily periodic one server queue.

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