

Service rate-based analysis of two-phase single-server queueing system with hypoexponential customer service time

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Abstract. In this paper, we analyze the cost function of a two-phase single-server queueing system with Poisson input stream and hypoexponential customer service time. In stationary mode, the explicit form of the cost function is obtained and the points at which the function reaches an absolute minimum, are found. In the rest of the paper, additional sensitivity analysis of the optimal solutions of the cost function is done. At the end, some conclusions from the conducted analysis are presented through a comparative analysis of different forms of relationships between customer service intensities in terms of service speed changes in each phase.

Keywords: Poisson input stream; hypoexponential service time; cost function; optimization; sensitivity analysis.

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