



## ANALYTICAL EXPLICIT FORMULA FOR PERFORMANCE OF CUMULATIVE SUM PROCEDURE FOR EXPONENTIAL DISTRIBUTION

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### Abstract

The main goal of this paper is to derive explicit formulas of Average Run Length (ARL) by using integral equation technique for detecting changes in process mean. We find explicit formulas of ARL for Cumulative Sum chart when observations are independent and identically distributed (i.i.d.) exponentially distributed for the case of  $a \leq b$ . The explicit formulas for ARL that we have derived have been found to be accurate, fast and easy to calculate. Checking the accuracy of results, we found an excellent agreement between the closed-form expressions and numerical solutions and a computational time of former is much less than the latter approach. Additionally, the comparison of the performance between CUSUM and EWMA charts has been presented.

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