



**GENERATING FUNCTION FOR NONHOMOGENEOUS  
POISSON PROCESS ARRIVAL IN AN  
ASSEMBLE-TO-ORDER SYSTEM**

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**Abstract**

In 2003, Lu et al. described an assemble-to-order system of multiple product types that are composed of  $m$  components. They assumed that the demands arrive at the system following a homogeneous Poisson process and the replenishment leadtimes are stochastic. Under the assumption, they got the joint distribution and the limit distribution of  $m$  outstanding orders. Enlightened by that paper, the producers are not satisfied with the steady achievement. This paper extends the model to the circumstance that the orders arrive at the system following a nonhomogeneous Poisson process and gets the joint distribution and limit distribution of the  $m$  components.

**Keywords and phrases:** nonhomogeneous Poisson process, joint distribution, generating function.

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