World Academy of Science, Engineering and Technology
International Journal of Physical and Mathematical Sciences
Vol:9, No:06, 2015

A Study on Stochastic Integral Associated with Catastrophes

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Abstract : We analyze stochastic integrals associated with a mutation process. To be specific, we describe the cell population process and derive the differential equations for the joint generating functions for the number of mutants and their integrals in generating functions and their applications. We obtain first-order moments of the processes of the two-way mutation process in first-order moment structure of X (t) and Y (t) and the second-order moments of a one-way mutation process. In this paper, we obtain the limiting behaviour of the integrals in limiting distributions of X (t) and Y (t).

Keywords : stochastic integrals, single–server queue model, catastrophes, busy period
Conference Title : ICMPA 2015 : International Conference on Mathematical Physics, and Applications
Conference Location : New York, United States
Conference Dates : June 04-05, 2015