Original Articles

Analysis of Data from a Series of Events by a Geometric Process Model

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摘要   Geometric process was first introduced by

Lam$^{[10,11]}$. A stochastic process $\{X_{i}, \ i = 1, 2,\cdots$

$\}$ is called a geometric process (GP) if, for some $a > 0, \{a^{i-1}X_{i}, \ i = 1, 2,\cdots \}$ forms a renewal process.

In this paper, the GP is used to analyze the data from a series of

events. A nonparametric method is introduced for the estimation

of the three parameters in the GP. The limiting distributions of

the three estimators are studied. Through the analysis of some

real data sets, the GP model is compared with other three

homogeneous and nonhomogeneous Poisson models. It seems that on

average the GP model is the best model among these four models in

analyzing the data from a series of events.

关键词   Nonhomogeneous poisson process, hazard function, renewal process, geometric process, limiting distribution, the lindeberg-feller theorem

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Abstract

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