Hazard rate ordering of spacings of heterogeneous exponential random variables

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Abstract

Order statistics and spacings are of great interest in the contexts of survival analysis and reliability modeling. In the literature, there are a number of papers on stochastic comparisons of spacings of independent and identically distributed exponential variables. However, because of the complicated nature of the problem, there are few references to the case in which the variables are not independent and identically distributed. Kochar and Korwar (1996) verified that the normalized spacings of three independent but not identically distributed exponential variables are ordered according to hazard rate order, and conjectured the same result for the general case of n heterogeneous exponential random variables. In the reference of Wen et al. (2007) the ordering in the general case continues being a conjecture. The purpose of this paper is to investigate the hazard rate ordering of spacings and normalized spacings of heterogeneous exponential random variables.