Characterizations of the exponential distribution based on the order-statistics and the record-values property within renewal processes

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ORAL PRESENTATION (20 minutes)

Abstract

There are several well-known connections between renewal theory and ordered data. To name one, the order-statistics property relates the conditional distribution of the occurrence times from a Poisson process to order statistics from a uniform distribution (see, e.g., Karlin and Taylor 1998, Resnick 1992). Among several extensions to point processes in literature (cf. Feigin 1979, Puri 1982), Liberman (1985) characterized the Poisson renewal process via the order statistics property. We give an introduction into the topic and briefly discuss a generalized version of the characterization by Liberman (1985).
Our main focus in this talk is the relation of record values and renewal processes. Taking a random inspection time instead of a fixed point of time, we introduce the so-called "record-values property". Based on this property, a related characterization for the distributions of the underlying renewal process, the record values and the random inspection time is shown.

References

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