



ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ



Εβδομαδιαίο Σεμινάριο

## DISTANCE-BASED INFERENCE FOR ONE-SHOT DEVICES

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One-shot devices, which are products that will get destroyed immediately after use, have been widely studied in the recent years., mainly motivated by the work of Fan et al. (2009). In this paper, an extensive study of the reliability of electro-explosive devices (which are indeed one-shot devices) is done, considering that after a successful detonation, the device can not be used any further, and that in case of failure, the exact time when it failed is unknown. Therefore, the data from such devices consist of both left censored (failure) and right censored (success) observations at pre-fixed inspection time points, and the observations are binary data (failure or not) instead of real failure time data. This kind of data is also known as current status data in the survival analysis literature. In this talk we propose distance-based estimators and tests as an alternative to MLE and classical Wald test, in the problem of one-shot device testing. These estimators and tests are, both theoretically and empirically, shown to be more robust.

References: Fan, T. H., Balakrishnan, N. and Chang, C. C. (2009). The Bayesian approach for highly reliable electro-explosive devices using one-shot device testing. *Journal of Statistical Computation and Simulation*, 79(9), 1143-1154

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