

**Review report on the paper entitled
“TTT-SiZer: A graphic tool for aging trends recognition”**

Based on first and second derivatives of Total-Time-on-Test (TTT) transform the authors developed a new method to detecting aging pattern of a lifetime data. By means of Monte Carlo simulation they evaluated the finite sample properties of the graphical tool TTT-SiZer. Overall the paper worth publishing in Reliability Engineering and System Safety subject to major revision.

Major Comments

- (1) In Definition 1.1, The conditional survival function is obtained; conditional on what? one need to specify. Also, Let X a lifetime should be Let X be a lifetime random variable
- (2) In Definition 1.1 why the definition of DMRL is given. It can be removed as no further discussion on it(except Proposition 2.1). Otherwise they can add the definitions of NBU and IFRA classes. What is the possibility of developing a test against DMRL based on the proposed methods.
- (3) Some notational inconsistency in the algorithm 1(definition of X^* and $\hat{\mu}_j^*$). Please correct it.
- (4) In Table 3 why the power decreases as the sample size increases. Authors should give a proper justification.
- (5) The authors discuss two test procedure, test against NBUE and test against IFR. It would be nice to give brief discussion on test against other aging classes in the conclusion test. For example Klefsjo developed a test against IFRA class based on scaled TTT transform. The new aging classes which mentioned in the conclusion can be defined in Definition 1.2.

Minor Comments

- (1) In abstract based on life data should be based on lifetime data. Similar changes can be made in other places too.
- (2) The last four lines in Page 4 can be rewritten as it was not well-written and lengthy.
- (3) Page 4, line 93, Based on the sample order statistics we can construct the empirical distribution function. This can be changed to Based on the sample order statistics empirical distribution function is given by. (it is the representation available.)
- (4) Page 14 line 216 Montecarlo should be Monte Carlo.
- (5) Page 28, line 490, we simulate samples of size $n = 100, 500, and 100$, $n = 50$ is missing.
- (6) What are P_{75} and P_{95} in the Tables 2 and 3. Please clearly specify it.
- (7) References 18 and 19 are not mentioned in the text.
- (8) References should be written uniform fashion. For example some cases volume number is not given.
- (9) There are several inconsistencies in the notations, please correct it in the revised version.