

Report on the paper Accelerated Life Testing Model for a Generalized  
Birnbbaum-Saunders Distribution

by

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**Response to Referee 3**

**We would like to thank the reviewer for the detailed comments and valuable suggestions which have been incorporated in the revised paper. The following is point-by-point response to these comments. Our responses are in bold. We also indicate the locations where changes were made in the paper.**

*Comments and Responses:*

1. Page 2, colonne 1, paragraphe 3, je ne comprends pas la fin de la deuxième phrase "...[10] considers the effect ...memory process" (mais c'est peut-être dû à mon anglais !).

**Response: Thank you for this question. To make this sentence easy to understand, we have deleted the end of the sentence. See page 2, col 1, paragraph 3. The modified sentence is "One of the GB-S distributions proposed by Owen [10] considers the effect of sequence of loading and the crack extension". The explanation of this sentence is that: SB-S distribution assumes that the sequence of loading does not affect the cumulative damage on the components, that is, starting at high stress and followed by the low stress has the same effect with starting at low stress and then high stress.**

2. Page 2, colonne 2, juste avant (3) : enlever "and hazard function".

**Response: Thank you for this suggestion. We have done so. Please see page 2, col 2, last sentence in first paragraph of part "II", we also add the definition of  $f$  and  $R$  to obtain hazard function. Please see the end of page 2, col 2.**

3. Page 3, il y a différentes choses que je ne comprends pas bien dans la partie A :

- que signifie "for  $Z=-2/\alpha$  or  $Z=2/\alpha$ " pour une var  $Z$  de loi normale ??? (événement de probabilité nulle)

**Response: Yes.  $Z$  belongs to standard normal distribution, which is a continuous distribution whose probability at a point is zero. This is just**

the relationship between  $Z$  and  $T$ , such that by investigating the range of  $Z$  we consequently have the range of  $T$ . When computing the moment of  $T$ , we do not take the case of  $Z = -\frac{2}{\alpha}$  or  $\frac{2}{\alpha}$  into account.

- que signifie "it is worth noting that when  $Z < -2/\alpha$ , the moments of  $T$  do not exist". Le fait qu'un moment de  $T$  n'existe pas ne peut dépendre de l'événement aléatoire " $Z < -2/\alpha$ " (?).

**Response: Yes. The moment of GB-S distribution does not exist when  $Z < \frac{2}{\alpha}$  because in the incomplete gamma function  $I_2$ , there is  $(-1)^{\frac{r}{\lambda} - 2s}$ , when its exponential part is fraction,  $I_2$  is not defined.**

4. Page 3, début de la section III (avant A) : quelques fautes de frappe ("flxible", "accelrated", "This sections begins", "their performances is compared")

**Response: Thank you, these errors have been corrected to "flexible", "accelerated", "This section" and "their performances are compared". Please see page 3, col 2, line 1, 4, 5, 6 and 8 in first paragraph of part "III".**

5. Page 4, juste après la formule (8) : enlever "i is the i-th stress level" (description identique à  $V_i$ )

**Response: Thank you for this suggestion. We have removed it.**

6. Figures : les légendes ne sont pas toujours très lisibles...

**Response: Thank you. We have changed the title of Figure 3 and 4 to "Predicted *cdf* of inverse power law based Weibull, SB-S, GB-S models and theoretical *cdf*" and "Predicted *cdf* of exponential form based Weibull, SB-S, GB-S models and theoretical *cdf*". Those smooth curves, representing *cdf*, are predicted by the three ALT models we develop. Please see top of page 6.**