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Journal Name:	<u>British Journal of Applied Science & Technology</u>
Manuscript Number:	Ms_BJAST_29596
Title of the Manuscript:	Size-Related Properties of Area1 of Approximate Entropy to Characterize Time-Series Organization
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments		
<u>Minor</u> REVISION comments	Overview: The authors study the “practical” estimator <i>area1 of approximate entropy</i> (a1ApEn) in order to provide a methodology which can improve time-series analysis. This is done firstly by adopting of a set of certain different generating procedures (numerically computed), and through the computation of the correlation between certain indicators and the logarithm (base 10) of the number of each considered sample, they provide a classification procedure of the significance, or not, of the sample size. Then, a resampling process is used to show that the size-related properties detected by those (prototypic) generating procedures remain invariant. The above resampling method is performed to empirical data, such as the resting heart rate and solar wind time-series. This is a rather interesting approach which finally shows that size-related properties are informative in terms of identification of the process which generates each time a time-series. <i>Note:</i> The text in red below represents the suggested changes/additions. General Comments:	The use of Arial font is due to the template from BJAST. So, we don't know if we should or if we could change the font. (a), (b) and (c) corrected/changed as suggested. Repeated reference [8] deleted. Renumbering: “...infinity [5,6] (see, also [7]),...”



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	(a) In general, I suggest the authors to use the MathType equation editor when writing in MS Word, as it is far more superior and efficient than the limited Word's build-in equation editor. (b) Do not use Arial for the formulas, variables and symbols. Please use italics (or Math Mode if you are using MathType for equation editing) when you write mathematical notations, such as variables or user-defined functions. For Example, use k, r_i, $f(x)$ μ instead of k, r_i, $f(x)$, μ, etc. On the other hand, please use upright letters when writing known functions, e.g. write $\Gamma(x)$ or $\log(x)$ instead of $\Gamma(x)$ or $Log(x)$. When you are referring to vectors or matrices use bold upright letters, like $\mathbf{r}$, $\mathbf{A}$, etc. (c) Please use the large integral or summation symbol when writing in an equation line. The small symbols for integration and summation are for the in-line equation (i.e. the mathematical expressions that lie inside a paragraph). Minor Comments: Page 1: Abstract: Please rewrite as "...of five different sizes ($N = 100, 200, 400, 500, 1000$) for each process, and a set of indicators (maximum, minimum and mean a1ApEn values) was taken. The correlation between a given indicator and $\log_{10} N$ was classified". Please, apply General Comment (b) everywhere in the manuscript. Line 17: Please rewrite as "S_R, and Tsallis entropy, S_q". Please, apply General Comment (b) everywhere in the manuscript. Line 23: Please rewrite as "Approximate Entropy [7] falls into the category of the so-called "practical estimators". Page 2: Line 44: Please rewrite as "(namely, the tolerance for differences, r, and the	
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	size of the probing window, m).". Please, apply General Comment (b) everywhere in the manuscript. Line 49: Please rewrite $m=1$ instead of $m=1$. Please, apply General Comment (b) everywhere in the manuscript. Line 61: Please rewrite as "Within a time-series of size N, ApEn is devised...". Please, apply General Comment (b) everywhere in the manuscript. Line 64-77: Please rewrite as "Eqs 1-3 below detail the numerical procedure. A sub-vector i of size m is compared to every other sub-vector of size m along the original time-series. For each paring, a match is generated if the distance is equal or less than a given tolerance r. The counting C for a sub-vector i is the number of matches (#) weighted in relation to the total number of comparisons made. Thus, for a given sub vector i: $C_i^m(r) = \frac{\#_i^m}{N - m + 1}.$ For the whole set of comparisons, ϕ is a variable computed as: $\phi^m(r) = \frac{1}{N - m + 1} \sum_{i=1}^{N-m+1} \ln(C_i^m).$ Notice that the denominator in eqs. (1) and (2) is the same for all the sub-vectors i, and that for each i there is, at least, one positive match coming from the comparison of i and i itself." Please, apply General Comment (b) and (c) everywhere in the manuscript. Page 3: Line 80: Please rewrite as $\text{ApEn}(m, r, N) = \phi^m(r) - \phi^{m+1}(r).$ Lines 84-100: Please change vector r from Arial to r, as it is written in Line 97. Line 102: Please rewrite as $\text{ApEn}(1, r, N) = \phi^1(r) - \phi^2(r).$ Lines 104-105: Please rewrite as "The last step is to compute the numeric integral of eq. (5) in relation to the normalized tolerance vector r^*". Change all the expressions like Eq X or Eqs. X to eq. (X) or eqs. (X), throughout the	
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	manuscript. Line 107: Please rewrite as $a1ApEn(N) = \int_0^1 ApEn(1, \mathbf{r}^*, N) d\mathbf{r}^* .$ See General Comment (c). Lines 355-356: Please rewrite as “S.M. Pincus, Approximate entropy as a measure of system complexity, Proc. Natl. Acad. Sci. USA 88(6) (1991) 2297–2301. doi:10.1073/pnas.88.6.2297”. Lines 357-358: Please remove reference [8]. Remove also the citation [8] inside the manuscript and rearrange citation numberings accordingly, for example Line 25 should now rewritten as “infinity [7,8] (see, also [9])...”.	
<u>Optional/General</u> comments		