



SDI Review Form 1.6

Journal Name:	British Journal of Mathematics & Computer Science
Manuscript Number:	2014_BJMCS_13537
Title of the Manuscript:	The Possible Structure in the Distribution of Decimals in the Euler's Number Expansion
Type of the Article	Short 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)
Compulsory REVISION comments	Most of the knowledge about the sequence of the decimal digits in the Euler's number is a set of unproved conjectures. This manuscript, proposes a new and simple way of treating the problem of knowing if the e digits are indeed distributed randomly. In none of the classical papers about the e digits numbers it is stated that the distribution of decimals digits in the Euler's number e, is structured and thus not random. The author or authors show us a new way to look for the Euler number and their apparent structure. Meanwhile, some doubts about the statistical evidence of the structured sequence's, come out with the work of Rodrigues & Martins (2014) that leads us with a new question: The structured sequences observed in this paper by Poisson panel-data models, are related to the e digits or with the numerical uncertainty associated to each computed digit d_i? It is proposed to the author or authors, to explain, in two or three paragraphs, that the statistical evidences of the structured sequences of the digits of e comes from the values of the digits and not from their numerical uncertainty (this is better explained on the "Minor REVISION comments"), in order to strengthen their conclusion. In relation to the mathematical notations used in the short paper, why the author or author represents the probability of an event by Pr, like in the case "$\Pr(d_i = n) = \Pr(d_j = n)$" instead of the usual notation of $P(d_i=n)=P(d_j=n)$? The most usual notation for the representation of the probability of an event A, is P(A).	Regarding your question concerning the cause of the observed structured sequences of decimals d_i of the Euler's number (whether this structure is related to the Euler's number itself or whether it is a product of arithmetical operations of approximation of the number e), I should say the following. The nature of the statistical attack on e randomness (which ignores the fact that the decimals d_i are the result of a computation and tries to find out only whether the observed series of d_i behaves as though it were the realization of a sequence of i.i.d. random variables with discrete uniform distribution on [0,9]) does not allow us to directly answer such a question. However, seeing as the different algorithms for calculating the decimals d_i of the Euler's number give us the same digits (and hence the same sequences of d_i) we may suspect that the observed structure is an attribute of the Euler's number itself. I appreciate very much your inspiring remarks and have added a brief section to the revised version of my paper regarding these notions; please observe. I have made the corrections in the text of the revised version of my paper in full accordance with

	When the author or authors said “Using the variable X we generate four additional variables X₃, X₂, X₁ and X₀ in the following way” it is usual to represent the variables as X₃, X₂, X₁ and X₀. The same could be applied to the expressions used in the short paper: $X_3 = \left[\frac{X}{10^3} \right]$ that could be replaced by expressions such as $X_3 = \left[\frac{X}{10^3} \right]$, and so on. When the author or authors write “the constructed dataset the span of the generated variables is X₂, X₁, X₂ ∈ [0, 9], X₃ ∈ [0, 3].”, they must change for X₂, X₁, X₀ ∈ [0, 9], X₃ ∈ [0, 3].”, because the second X₂ was erroneously writhed as X₀. The same notation for the random variables of tables 1 and 2, X₁, X₂ and X₃, could be applied, staying such as X₁, X₂ and X₃. In the Table 3, all the statistic's parameters are without abbreviations, except the Std. Dev. . It is suggested to write “Standard deviation”. The references are not according the “References Style” of the Journal. In the text, “[Baker 75]”, for example, should be cited like “(see [1])”. The cited papers of “[Marsaglia 05, Shanks and Wrench 69], should be cited like “papers like the ones of Marsaglia in 2005 [2] or Shanks and Wrench in 1969 [3], have applied statistical tests....”.	your suggestions; please observe. I have changed the reference style of the revised version of my paper compliant with your instructions; please observe.
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All references in the Reference List should follow the following style:

Reference to a journal:

For Published paper:

3. Shanks D., Wrench JW. Calculation of e to 100,000 Decimals. Math. Comput. 1969; 23:679-680.

Note: List the first six authors followed by et al.

Note: Use of DOI number for the full-text article is encouraged. (if available).

Note: Authors are also encouraged to add other database's unique identifier (like PUBMED ID).

For Accepted, unpublished papers.

Same as above, but "In press" appears instead of the page numbers.

1. Saha M, Adams ML, Nelson SC. Review of digit fusion in the mouse embryo. J Embryol Exp Morphol. 2009;49(3): (In press).

Note: List the first six authors followed by et al.

Note: Use of DOI number is encouraged (if available).

Note: Authors are also encouraged to add other database's unique identifier (like PUBMED ID).

Reference to a book:



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	Personal author(s) Rang HP, Dale MM, Ritter JM, Moore PK. Pharmacology. 5th ed. Edinburgh: Churchill Livingstone; 2003. <i>Editor(s) or compiler(s) as authors</i> Beers MH, Porter RS, Jones TV, Kaplan JL, Berkwitz M, editors. The Merck manual of diagnosis and therapy. 18th ed. Whitehouse Station (NJ): Merck Research Laboratories; 2006. Authored chapter in edited publication Glennon RA, Dukat M. Serotonin receptors and drugs affecting serotonergic neurotransmission. In: Williams DA, Lemke TL, editors. Foye's principles of medicinal chemistry. 5th ed. Philadelphia: Lippincott Williams & Wilkins; 2002. Reference to Web-resource or Electronic articles. Hugo JT, Mondal SC. Parallels between tissue repair and embryo morphogenesis: a conceptual framework. Global Health. 2006;16:4. Accessed 29 March 2012. Available: http://www.globalizationandhealth.com/content/1/1/14. Anonymous. Parallels between tissue repair and embryo morphogenesis: a conceptual framework. Global Health. 2006;16:4. Accessed 29 March 2012. Available: http://www.globalizationandhealth.com/content/1/1/14.	
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Minor REVISION comments	I agree with the author or authors when they said, when discuss the random distribution of the Euler number digits, “With no mathematically rigorous proof in sight, the main method of attacks on e randomness becomes statistical analysis” but, a test is valid if it measures what it is supposed to measure. Thus, using Poisson panel data set to prove the randomness of the d_j ($j \in N$) digits of e, we have limitations and benefits. Obviously the benefits are much larger with greater data sets (like in this case), with more variability but less collinearity among the variables. But the use of the Poisson panel-data models leads to the assumption of some parameters. The author or authors assume in their models that the “exponentiated random effects are distributed as gamma with mean one and variance α”, without explains what this assumption are able to made in the variable that was supposed to measure. They are measuring the value of the d_j digits of Euler number or the structure of the numerical uncertainty of the $d_1, d_2, d_3, d_4, \dots, d_j$ digits” Rodrigues & Martins (2014), (in an article that can be assessed in the link http://www.scirp.org/journal/PaperInformation.aspx?PaperID=43176#.U_uWgfl_ukE) states that “Arithmetical operations of approximations lead to the existence of numerical uncertainty, which depends upon the operations made, and the number system used.”, in the same sense that the author or authors of this short paper saying “the representation of this number in any base would never end and would never settle into a permanent repeating pattern”. The authors of the above mentioned paper (Rodrigues & Martins, 2014), conclude that the numerical uncertainty of a	
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	number given by an algebraic operation, that I think is also applied to the values obtained by the expression $e = \sum_{n=0}^{\infty} \frac{1}{n!}$, is path dependent and structured, similarly to the remark on this short manuscript.	
<u>Optional/General</u> comments	It is proposed, but not compulsory, that the author or authors explains in their manuscript why they are not seeing in their tests, the structure of the numerical uncertainty of Rodrigues & Martins (2014) but the values of the d_j digits of e . For other hand, the most recent reference of the presented work has five years, and the mentioned work is from this year, and their mention point to a more complete revision of the State of the Art.	As I already said, I value a lot your inspirational remarks regarding the possible connection between the numerical uncertainty in the expression of the Euler's number and the observed structured sequences of decimals of e . I am going to develop these ideas in my future work. I wish to thank the reviewer for taking the time to carefully read the manuscript and all invaluable help in improving my paper.