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| Journal Name: | [**Journal of Advances in Mathematics and Computer Science**](https://journaljamcs.com/index.php/JAMCS) |
| Manuscript Number: | **Ms\_JAMCS\_133958** |
| Title of the Manuscript: | **NEW CONTEMPORARY CONJECTURES FOR THE RIEMANN HYPOTHESIS** |
| Type of the Article |  |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **The manuscript is about an equivalent statement of the Riemann Hypothesis namely the one concerning the Dirichlet η(s) function ( in the manuscript S(s) = - η(s) ). This point is known (see Borwein, S. Choi, B. Rooney and A. Weirathmueller: The Riemann hypothesis - a resource for the afficionado and virtuoso alike. 1st Ed. CMS Books in Mathematics. Springer-Verlag New-York. 588p. (2008) ).** | Thank you for your valuable comments. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | **The title is not suitable. I suggest : New proofs of the equivalent statement of the Dirichlet eta function.** | Ok for: New proofs of the equivalent statement of the Dirichlet eta function. |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | **To change new results by new proofs.** | yes it's good |
| Is the manuscript scientifically, correct? Please write here. | The manuscript is not scientifically correct. There is some fatal errors in the beginning :   * Page 2, he writes S=C\_1-C\_2. The eta function or the series S is convergent for Re(s)>0, but not absolutely convergent so that we can not write it as C\_1-C\_2. We consider :   C\_1**= sum\_{n=1}^{+∝}1/(2n)^s=(1/2^s) sum\_{n=1}^{+∝}1/n^s, but Re(s)=r \in ]0,1[, then the series C\_1 is divergent.** | Thank you very much for this careful reading. First of all, I assure you that there are no errors in the sections you indicated, because all the results I cited are taken and slightly distorted from others already cited and demonstrated for a long time by other researchers. Perhaps the only mistake I made was not mentioning it and only citing the formulas without demonstrating them.But still, we will follow your rich recommendations so that our paper is more than perfect.The serie S is convergent for strictly positive real s, by application of the alternating series criterion; it is in fact the same for Re(s)>0, which is demonstrated using Abel's lemma (we can also show more simply the absolute convergence of the serie ∑\_{n=1}^{+∞}(((2n)^{s}-(2n-1)^{s})/((2n)^{s}(2n-1)^{s})))And The Riemann ζ function is a meromorphic complex analytic function defined, for any complex number s such thatRe(s)>1, by the Riemann serie:ζ = ∑\_{n=1}^{+∞}(1/(n^{s}))ζ = ((S(s))/(1-2^{1-s}))According to the theory of Dirichlet series, we deduce that the function thus defined is analytic over its domain of convergence. The series does not converge at s=1 because we have ∑\_{n=1}^{m}(1/n)≥∫₁^{m+1}((dx)/x)=ln(m+1).If Re(s)>1, ζ(s)=∑\_{n=1}^{+∞}(1/(n^{s}))=S(s)+2∑\_{n=1}^{+∞}(1/((2n)^{s}))=S(s)+(2/(2^{s}))ζ(s), so ζ(s)=((S(s))/(1-2^{1-s}))This thus realizes the extension of the ζ function over Re(s)>0, except for s=1+((2kπ)/(ln(2)))i, k∈ℤ.Also we will realize the extension of the C₁ and C₂ suchC₁=∑\_{n=1}^{+∞}(1/((2n)^{s}))=(1/(2^{s}))ζ(s)=∑\_{n=1}^{+∞}((e^{-iln(2n)c})/((2n)^{r})) =∑\_{n=1}^{+∞}((e^{iα\_{2n}})/((2n)^{r}))=R₁+iI₁C₂=∑\_{n=1}^{+∞}(1/((2n-1)^{s}))=ζ-C₁=∑\_{n=1}^{+∞}((e^{-iln(2n-1)c})/((2n-1)^{r}))=∑\_{n=1}^{+∞}((e^{iα\_{2n-1}})/((2n-1)^{r}))=R₂+iI₂andS = C₁-C₂ , ζ=C₁+C₂*see: the new version of our paper*. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | Ref1: to correct C(s) par ζ(s).  Ref 5. To reject because we find the same fatal errors. | C or ζ means the same thing and it's the same capital letter. But we're going to change it just to please Mr. Hardy. *see: the new version of our paper*.  * Error is a human trait, but I assure you that there is no fatal error or mistake. |
| Is the language/English quality of the article suitable for scholarly communications? | Yes. | Thank U. |
| Optional/General comments | **The author does not numerate the equations. No details given.** | Reasoning and writing is inductive. |

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| **PART 2:** | | |
|  | Reviewer’s comment | Author’s comment *(if agreed with the reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?** | *(If yes, Kindly please write down the ethical issues here in detail) No.* |  |