|  |  |
| --- | --- |
|  | |
| Book Name: | [**Mathematics and Computer Science: Research Updates**](https://www.bookpi.org/bookstore/product/mathematics-and-computer-science-research-updates-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_6081** |
| Title of the Manuscript: | **Certain Addition Formulae in the form of Gamma Function** |
| Type of the Article | **Book Chapter** |

|  |  |  |
| --- | --- | --- |
| 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 makes a timely contribution to the theory of special functions by deriving a suite of new addition and summation formulae that link generalized hypergeometric functions directly to the Gamma function. These closed‑form identities expand the analytical toolbox for researchers who model and solve differential equations in physics, engineering, and the geosciences, where hypergeometric series frequently appear. Because the formulae are explicitly constructed to be “easy to understand and new in the field of special function,” they can streamline both symbolic manipulations and numerical evaluations, boosting computational efficiency in applications such as antenna‑satellite analysis and wave‑propagation studies. By enriching the foundational framework of hypergeometric analysis while highlighting practical use cases, the work promises broad utility and will be of clear interest to the wider mathematical‐science community. |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | It leaves two important points unclear:  What class of functions the identities concern. The abstract makes it clear that the results connect generalized hypergeometric series to the Gamma function, yet “hypergeometric” does not appear in the title.  Grammatical precision. Saying “formulae *in the form of* Gamma function” is awkward; readers may wonder whether the paper rewrites the Gamma function itself or merely uses it.  Suggested replacement: New Addition and Summation Formulae for Generalized Hypergeometric Functions via the Gamma 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. | The abstract is *not yet comprehensive*. It devotes most of its space to broad, rhetorical remarks about “synergy,” “conglutination,” and “geoscientific reality”, yet says almost nothing concrete about what the paper actually does, how the results are obtained, or why they matter. Only the final three lines tell the reader that the work “developed some addition formulae in association with Gamma function” and claims they are “new”.  Specific suggestions:  One sentence stating the problem the paper tackles (e.g., the lack of closed‑form addition and summation identities for certain generalized hypergeometric functions).  1‑2 sentences that summarize the main results,e.g., We derive X new closed‑form addition formulae and Y summation identities that express pFq series in terms of Gamma functions under conditions A, B.  A brief note on method*s* (e.g., use of Gauss/Bailey theorems, contiguous relations).  Remaining sentences for grammar (“Special functions provide” rather than “procure the sufficiency to diagnosticate,” etc.). |  |
| **Is the manuscript scientifically, correct? Please write here.** | The manuscript stops short of providing full derivations and independent verifications, its new addition and summation formulae cannot yet be judged scientifically correct. The foundational definitions are sound, but the burden of proof for the new results remains unmet.  Recommendations to establish correctness:  Supply step‑by‑step proofs (or an appendix) for every identity, explicitly indicating the contiguous relations or series transformations used.  Add a table of numerical evaluations for representative parameter pairs to confirm equality to at least 10^{-10}.  State admissible ranges for all parameters and discuss convergence when series are involved.  Consider computer‑algebra verification (e.g., Maple’s simplify with hypergeom routines) and cite the scripts. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.**  **-** | There is no reference published after 2013, and the list omits several standard, widely used, and more recent resources on generalized hypergeometric functions and symbolic summation. Consequently, the coverage is insufficient and outdated for a 2025 submission.  Formatting and accuracy notes:  Correct spelling errors, e.g., Abramowitz (not “Abraumowitz”) and “contiguous” (not “contigious”).  Ensure journal titles follow a uniform style (italics or full titles).  Provide complete bibliographic details (volume, issue, pages, DOI where available).  Verify that each cited work is actually used in the manuscript; remove any superfluous self‑citations. |  |
| Is the language/English quality of the article suitable for scholarly communications? | **Recommended improvements:**  Rewrite the abstract in plain, precise English that states (i) the problem addressed, (ii) methods used, (iii) principal results, and (iv) key applications, without rhetorical flourishes.  Correct grammar and syntax in every section. Aim for short, active sentences (“We derive six new addition formulae linking pFq series to Gamma‑function products”) rather than chained nominal phrases.  Standardize terminology and spelling (e.g., “contiguous relation,” “Abramowitz & Stegun”) and ensure all technical terms are used consistently.  Apply a uniform style guide for headings, equation numbering, references, and abbreviations (e.g., IEEE, AMS, or the journal’s own template).  Please check language and error to catch residual issues before resubmission. |  |
| Optional/General comments | The manuscript pursues a worthwhile goal, introducing new addition and summation identities that connect generalized hypergeometric functions to Gamma‑function products, but it presently falls short because most formulae are stated without full proofs or numerical verification, the exposition omits key details on parameter domains and convergence, the reference list is dated and thin on recent scholarship, and the prose contains substantial grammatical and stylistic issues; a comprehensive revision that supplies complete derivations (or a clear proof strategy), includes spot‑check evaluations or computer‑algebra confirmations, updates and standardizes the bibliography, and polishes the language would greatly strengthen the work and render it suitable for rigorous peer review.  Recommendation – Major revision.  The mathematical idea is promising, but the manuscript requires:   * complete proofs or a convincing proof outline for every new identity; * numerical or computer‑algebra checks for representative parameter choices; * an updated, well‑formatted bibliography; and * thorough language polishing. |  |

|  |  |  |
| --- | --- | --- |
| **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 |  |

**Reviewer details:**

**Nurul Raihen, USA**