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| Journal Name: | [**Asian Journal of Research and Reviews in Physics**](https://journalajr2p.com/index.php/AJR2P) |
| Manuscript Number: | **Ms\_AJR2P\_132343** |
| Title of the Manuscript: | **Universal Space-time Accelerated Expansion and Luminosities of Some Extragalactic Radio Sources** |
| Type of the Article | **ORIGINAL RESEARCH 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 has some importance for exploring the effects of the expansion of the universe on the luminosity of quasars, a topic of great relevance in astrophysics and cosmology. |  |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | The title of the manuscript is appropriate and accurately reflects the focus of the study. |  |
| **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.** | **Sugestion:** Both analytical and statistical methods have been used to determine the effects of observed space-time expansion on the luminosities of radio-loud quasars. We perform linear regression analysis on 170 extended quasars from Nilsson (1998) and 27 compact steep-spectrum (CSS) quasars from O'Dea (1998) and find that the luminosities of these sources are attenuated with space-time expansion.  The results show that the slope is 4.33 for compact quasars and 0.04 for extended quasars in the luminosity-redshift relationship, which means that compact sources are more luminous at earlier epochs. This is because compact quasars are more affected by denser gases and stronger gravitational fields in their host galaxies. It is concluded that space-time expansion does significantly attenuate the luminosities of extended quasars, whereas compact quasars are less so affected because they are in denser ambient environments and have stronger gravitational influence. These findings are important for cosmological models as they help to understand how dark energy driven space-time expansion affects the evolution of extragalactic radio sources. |  |
| **Is the manuscript scientifically, correct? Please write here.** | The current manuscript is scientifically sound in terms of methodology, analysis, and conclusions. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | The references in the manuscript are sufficient to establish fundamental concepts, but lack recent studies (post-2020) essential to demonstrate the current relevance of the study with the latest advances in cosmology and astrophysics. |  |

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| **Is the language/English quality of the article suitable for scholarly communications?** | Yes |  |
| **Optional/General** comments | There are areas where clarity, precision, and contextualization could be improved to strengthen its scientific rigor. In terms of strengths, the use of linear regression analysis to study the relationship between luminosity and redshift is appropriate and well-suited to the research question, and the division of quasars into extended and compact categories based on linear size is scientifically justified, aligning with established classifications in astrophysics. Findings such as the steeper slope (4.33) for compact quasars and the flatter slope (0.04) for extended quasars are consistent with the expected behavior of these sources in different environments, and the conclusion that the expansion of spacetime attenuates the luminosities of extended quasars more than compact ones is well supported by the data and aligns with current understanding of gravitational and environmental effects. Furthermore, the manuscript cites relevant and reliable sources, such as works on spacetime expansion, dark energy, and quasars, strengthening its scientific basis. However, there are several areas for improvement. Although the manuscript is scientifically sound, with the study closely resembling work already published in the **Asian Journal of Research and Reviews in Physics, Volume 8, Issue 3, Page 12-19, 2024; Article no. AJR2P.120251** (by the same authors?), which focuses on the linear sizes of quasars rather than their luminosities, raising questions about the incremental contribution of the study. The authors should explicitly state how this study advances their previous work, such as focusing on luminosity rather than linear size or offering new insights into spacetime expansion. The manuscript also does not provide sufficient details about the statistical methods used, such as assumptions, uncertainties, or confidence intervals, limiting the reproducibility of the study. Authors should include a more detailed description of the statistical techniques, including assumptions (e.g., normality of data) and measures of uncertainty (e.g., error bars, p-values). Furthermore, the manuscript does not explicitly discuss limitations of the study, such as potential biases in sample selection or the impact of observational uncertainties on the results. Authors should acknowledge these limitations and discuss how they might affect the interpretation of the results, such as whether the sample is representative of the broader population of quasars. Finally, although the manuscript concludes that the expansion of spacetime affects quasar luminosities, it does not fully explore the broader implications of these findings for cosmology or astrophysics. Authors should discuss how their results contribute to our understanding of dark energy, cosmic expansion, or the evolution of extragalactic radio sources.  **Formatting suggestions:**  Figs. 1 & 2 are trivially known and do not add anything to the understanding of the text.  Although the ordinate axes (*log p*) in Figs. 4 & 5 have distinct value ranges, the abscissa axis concentrates the scattered points in the range of approximately 0 to  0.7 and, for this reason, the scale of this exicon could be restricted only between 0- 0.7. |  |

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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)* |  |

**Reviewer Details:**

**Samuel Bueno Soltau, Universidade Federal de Alfenas, Brasil**