

Review of: "Einstein-AdS gravity coupled to nonlinear electrodynamics, magnetic black holes, thermodynamics in an extended phase space and Joule—Thomson expansion"

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Potential competing interests: No potential competing interests to declare.

This paper investigates the thermodynamics, phase transitions, and stability of magnetically charged black holes in the context of AdS-NED. The significant advancements and insights presented in this work make it a deserving candidate for publication, after undergoing below revisions.

- Introduction

The introduction needs to be more detailed, providing a thorough explanation of why considering nonlinear electrodynamics is essential. NED theory and NED black holes should be summarized within a paragraph. While NED black holes have been extensively studied in the asymptotically flat de Sitter background, the motivation for exploring AdS NED black holes lies in their unique properties and the connection between AdS spacetime and NED. Incorporating recent publications in the field will enrich the introduction and highlight the interest and advancements in this research field.

- Section-2

In the Lagrangian formulation, it is essential for the author to provide further clarification regarding the selection of γ and the presence of the coefficient 4π in the denominator. Referring to Ref.-36, it is evident that opting for an arbitrary value of γ can result in a convoluted mass function. To simplify the analysis, two specific cases, $\gamma=1/2$ and $\gamma=3/4$, were introduced to address this complexity. Elaborating on this aspect will help readers comprehend the rationale behind the chosen values and their implications for the study.

- Figures

To enhance the paper, we recommend editing and shortening the figure legends for improved clarity. It is essential to provide an explanation in the caption of the first figure to clarify the presence of one or two horizons. Additionally, the typo "T=0,3" in the third figure should be corrected as T=0.3. In the fourth figure, the author is encouraged to present improved plots allowing readers to see the critical points.

- Conclusion

In this section, it is necessary to elucidate the significance of the results and their broader implications. This section

should summarize the key findings and their notable contributions to the field. It should serve as a wellspring of inspiration, motivating researchers to explore novel avenues of investigation.

- References

The reference list requires enhancement to acknowledge and credit novel studies, along with attributing recognition to the valuable input provided by the reviewers. The current overuse of self-citations by the author necessitates a more balanced and comprehensive approach in citing relevant literature from other researchers in the field. By doing so, the paper will demonstrate a fair and inclusive representation of the broader scientific community's contributions and strengthen the overall credibility of the work.