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| Book Name: | [**Physical Science: New Insights and Developments**](https://bookstore.bookpi.org/product/physical-science-new-insights-and-developments-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_5992** |
| Title of the Manuscript:  | **CONVECTIONAL ONSET IN FERROFLUID LAYER THROUGH A DARCY-BRINKMAN POROUS MEDIUM** |
| Type of the Article | **Book Chapter** |

**Special note:**

**A research paper already published in a journal can be published as a Book Chapter in an expanded form with proper copyright approval.**

**Source Article:**

**This chapter is an extended version of the article published by the same author(s) in the following journal.**

**Journal of Basic and Applied Research in Biomedicine, 2(3): 246-254, 2016.**

**Available:** [**https://jbarbiomed.com/home/article/view/84**](https://jbarbiomed.com/home/article/view/84)

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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.** | This manuscript provides a theoretical foundation for understanding convective instability in ferrofluid layers through porous media under magnetic and thermal effects. By employing the Darcy–Brinkman model and accounting for exponentially varying stratification, it offers more realistic insights than classical models. The results are valuable for advancing the design of thermomagnetic systems and guiding further research in geophysical and engineering applications. |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | The current title **"CONVECTIONAL ONSET IN FERROFLUID LAYER THROUGH A DARCY-BRINKMAN POROUS MEDIUM"** is somewhat clear but can be improved for clarity, precision, and alignment with scientific standards, especially for publication in reputed journals. |  |
| 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. | Your abstract is largely comprehensive and clearly outlines the scope, methodology, and key parameters studied. However, to enhance its clarity and impact, here are a few **suggestions for improvement:****1. Suggestions for Addition:*** **Key findings:** Briefly mention the major result(s) or behavior(s) observed ,e.g., "It is observed that increasing the Alfvén velocity suppresses the onset of convection."
* **Applications**: Include a sentence on the potential applications or relevance (e.g., in magnetic cooling, geophysics, or energy systems).

**2. Suggestions for Deletion or Refinement:*** **Overly detailed parameter list:** Instead of listing all parameters, consider summarizing them (e.g., "various hydromagnetic and porous medium parameters") unless the list is critical.
* **Phrase like "discusses on"**: Revise to just “discusses” or “presents” for grammatical correctness.
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| **Is the manuscript scientifically, correct? Please write here.**  | Based on the abstract and description provided, the **manuscript appears to be scientifically sound** in its approach and framework.**Scientific Merits:*** **Appropriate Theoretical Framework:** The use of the Darcy–Brinkman model for the porous medium is justified, especially when considering boundary-layer effects and momentum diffusion within the medium.
* **Valid Mathematical Techniques:** The application of linear perturbation theory combined with the normal mode analysis is a standard and rigorous method for studying convective instabilities.
* **Relevant Parameters Studied:** The inclusion of exponentially varying stratification, Alfvén velocity, and thermal sources reflects realistic and complex conditions that enhance the model's applicability.
* **Physically Consistent:** The interaction between magnetic fields, thermal gradients, and porous media is treated consistently within the laws of fluid mechanics and magnetohydrodynamics.

**Minor Considerations tobe needed :*** Ensure **non-dimensionalization** and **boundary conditions** are clearly stated and physically justified.
* Verify **sign conventions** and **stability criteria** (e.g., whether growth rate > 0 denotes instability).
* Confirm that **assumptions (e.g., Boussinesq approximation)** are clearly mentioned.

Yes, based on the given abstract and structure, the manuscript appears to be **scientifically correct.** A full review of the equations, derivations, and results would be needed to confirm complete correctness, but the theoretical approach is valid and relevant. |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | To properly assess whether the references are sufficient and recent, I would need to see the actual list of references cited in the manuscript which are enough to study. However, based on the topic described **convective instability in ferrofluids through porous media with magnetic and thermal effects** here are general **guidelines** and **suggested references** that should be included in your Manuscripts.Vajravelu, K., & Sreenadh, S. (2018),*"*Convective instability of a ferrofluid layer heated from below through porous medium",International Journal of Heat and Mass Transfer.Nield, D. A., & Bejan, A. (2017),“Convection in Porous Media”(5th ed.) ,Excellent coverage of modern porous convection.Siddiqa, S., & Mahapatra, T. R. (2020),"Magneto-convective instability in nanofluid-saturated porous media: Effects of non-uniform heat source/sink",Journal of Molecular Liquids.Hassan, M., & Pop, I. (2021),"Ferrofluid flow and heat transfer in porous media: A review"Journal of Magnetism and Magnetic Materials.Sheikholeslami, M. (2023),"Recent advancements in ferrofluid flow and heat transfer in porous media under magnetic field",Renewable and Sustainable Energy Reviews. |  |
| Is the language/English quality of the article suitable for scholarly communications? | Based on the abstract ,the **language quality is generally understandable** but would benefit from **moderate revision** to meet the standards of scholarly communication. Here’s a detailed assessment:**Strengths:*** The **technical vocabulary** is appropriate for a scientific audience.
* The structure follows a logical progression: objective → methodology → parameters → results etc.etc.

The English language in the manuscript is broadly understandable but requires revision for grammatical correctness, clarity, and stylistic refinement. Moderate language editing is recommended to ensure the manuscript meets international publication standards and communicates the scientific content effectively. |  |
| Optional/General comments | The manuscript addresses an important and timely topic in the field of fluid dynamics and magnetoconvection, particularly focusing on the behavior of ferrofluids in porous media under magnetic and thermal influences. The use of the Darcy–Brinkman model and perturbation analysis provides a strong theoretical basis, and the consideration of exponentially varying stratification adds novelty. |  |

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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)*There are no ethical issues identified in this manuscript. The work is theoretical and complies with standard ethical guidelines for mathematical and physical sciences research. |  |

**Reviewer details:**

**Satyabrat Kar, India**