Review of: "Some Aspects of Maxwell's Equations, Klein-Gordon Equations, and Heat and Mass Transfer Equations in an n-Dimensional Maximally Symmetric Space-Time from the Classical and Quantum Mechanical Standpoints"

Mushtaq Ahmad[1]

1 FAST - National University of Computer and Emerging Sciences (NUCES)

The above manuscript by Harish Parthasarathy explores Maxwell's equations, Klein-Gordon equations, and heat and mass transfer equations within n-dimensional maximally symmetric space-time contexts. The study explores these equations in both spherical and hyperbolic spaces embedded in higher-dimensional Euclidean and Minkowski spaces, highlighting the effects of these geometries and symmetries on the equations' behavior. Both classical and quantum mechanical perspectives are examined, offering insights into density and velocity evolutions, quantum Boltzmann equations, and Feynman's path integral methods in the context of gravity interacting with electrons and positrons.

1. Can the author provide more intuitive explanations or visual aids to help readers better understand the geometrical interpretations of the n-dimensional spaces and their symmetries?
2. Some of the transformations and derivations are presented very concisely. Could the author include more detailed steps, especially in the sections involving complex transformations and parametrizations?
3. How do the theoretical findings translate to physical phenomena that can be observed or measured? Are there specific experiments or observations that could be used to validate the theoretical predictions?
4. How do the results obtained in n-dimensional spaces compare to those in lower dimensions? Are there significant differences or new phenomena that arise solely due to the higher-dimensional context?
5. What are the next steps in this line of research? Can the author outline potential applications or specific areas of theoretical physics where these findings could be particularly impactful?

Moreover, the manuscript is dense and highly technical, which might make it challenging for readers who are not experts in the field. More explanatory text and intermediate steps in derivations could enhance understanding.

1. Application Examples: While the theoretical framework is solid, the manuscript could benefit from more concrete examples or applications that demonstrate the practical implications of the theoretical findings.
2. Empirical Validation: The study is largely theoretical. Discussions on how these findings could be empirically tested or validated would strengthen the manuscript.