

Peer Review

Review of: "Philosophical Aspects of Time in Modern Physics"

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The review article “**Philosophical Aspects of Time in Modern Physics**” provides an ambitious and intellectually stimulating attempt to bridge classical Aristotelian philosophy with the conceptual foundations of modern physics, particularly relativity and quantum mechanics. The manuscript demonstrates strong interdisciplinary scholarship and presents a historically grounded discussion linking Aristotle’s continuum theory, the notion of the “now,” and causal metaphysics with contemporary physical concepts such as spacetime relativity, quantum granularity, delayed-choice experiments, and the philosophical interpretation of causality. The author successfully synthesizes diverse sources from the philosophy of science and theoretical physics and provides an original interpretative framework that challenges strictly reductionist or mechanistic approaches to time.

The manuscript possesses several notable strengths. The historical and philosophical contextualization is comprehensive and demonstrates excellent familiarity with primary philosophical traditions and modern physics literature. The discussion of topological versus metric structures of time and the integration of Aristotelian potentiality into interpretations of quantum indeterminacy provide intellectually valuable conceptual insights. Additionally, the structured comparison between features of time derived from relativity and quantum mechanics offers a coherent synthesis that helps readers understand the author’s philosophical argument.

However, several limitations reduce the overall analytical robustness of the manuscript. The argumentation frequently relies on speculative metaphysical interpretations, particularly regarding the unmoved mover, theological implications, and causal interpretations of delayed-choice experiments, which may be controversial and insufficiently justified within contemporary philosophy of physics discourse. The review would benefit from clearer differentiation between empirical physical interpretations and metaphysical extrapolations. Furthermore, some sections contain extensive

descriptive exposition of classical philosophical texts without consistently linking them to modern theoretical debates. The manuscript could also improve clarity and accessibility by reducing narrative length, strengthening structural transitions between philosophy and physics sections, and incorporating schematic summaries that systematically compare Aristotelian concepts with modern physical models. Greater engagement with alternative contemporary philosophical interpretations of time, including relational and block-universe perspectives, would further strengthen scholarly balance.

Overall, this article presents a creative and thought-provoking interdisciplinary contribution to the philosophy of physics. With moderate refinement in evidential balance, structural clarity, and engagement with competing philosophical frameworks, the manuscript offers meaningful scholarly value.

Declarations

Potential competing interests: No potential competing interests to declare.