

# Review of: "On the cosmological arrow of time"

Izzet Sakalli<sup>1</sup>

<sup>1</sup> Eastern Mediterranean University

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The article "On the cosmological arrow of time" by Andreas Henriksson discusses an alternative view of the expanding universe, where the observed cosmological redshift can be interpreted as the increase in particle mass over time. The author takes a philosophical perspective and uses the set of minima in the effective potential of a symmetry-broken quantum field theory to represent physically coexisting groundstates. The tunneling of energy within the set of groundstates through instantons is suggested to induce the change in particle masses. The directionality of instanton energy flow from high-energy-density to low-energy-density groundstates is proposed to define the cosmological arrow of time.

The article presents a clear and concise overview of the concept of the cosmological arrow of time and provides a unique perspective on its interpretation in a static universe where particle masses increase. The use of the philosophical approach to address the problem is an interesting and novel idea, which adds a new dimension to the discussion on the cosmological arrow of time.

However, the article's argument heavily relies on the validity of the philosophical assumption that the set of groundstates physically coexists. The author highlights that the argument becomes invalid if a sound argument for the increase in entropy within a contracting spacetime cannot be provided, as the second law of thermodynamics would then be violated. This limitation is acknowledged in the article, but it remains a significant concern as the argument's entire premise rests on this assumption. In short, "On the cosmological arrow of time" is a well-written article that provides an alternative interpretation of the cosmological arrow of time. The philosophical approach used to address the problem is intriguing and adds a unique perspective to the discussion. However, the validity of the philosophical assumption that the set of groundstates physically coexists remains a significant concern, and the argument presented in the article is dependent on its validity. The article could benefit from revision to address grammatical errors and provide additional explanation of some concepts, but it is otherwise a valuable contribution to the field.