



[conjecture]

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# Spacetime is a quantum computer

Open Quantum Collaboration\*†

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## Abstract

If spacetime is a quantum computer, then all physical systems are equivalent to quantum computational algorithms.

keywords: quantum spacetime, quantum computation, entanglement, quantum gravity

*The most updated version of this paper is available at*

<https://osf.io/rnckw/download>

## Introduction

1. Quantum theory operates in matter and energy.
2. Spacetime is entangled with matter/energy.
3. Due to (1) and (2), the quantum theory also rules spacetime.

## Conjecture

4. *Spacetime itself operates according to quantum computational algorithms.*

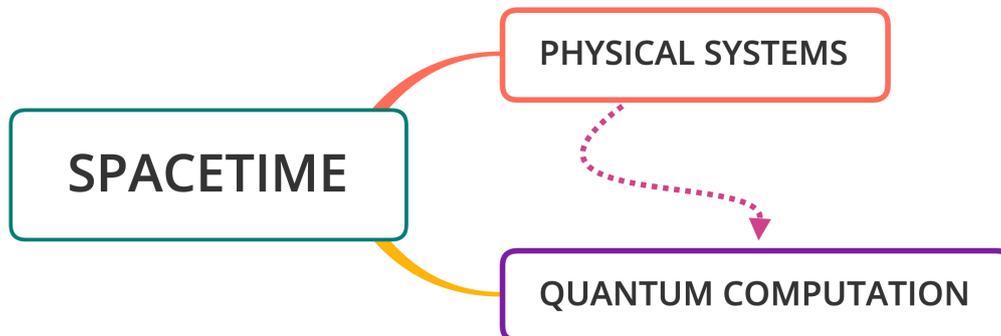
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# Overview

5. [1, 2]



# Quantum Computation

6. [3, 4]

# Final Remarks

7. If the conjecture (4) proves correct, then *all physical systems are equivalent to simulations/circuits of a quantum computer* [5].

# Open Invitation

*Review, add content, and **co-author** this paper* [6, 7].

*Join the **Open Quantum Collaboration*** (<https://bit.ly/ojmp-slack>).

Send your contribution to [mplobo@uft.edu.br](mailto:mplobo@uft.edu.br).

# Open Science

The **latex file** for this paper together with other *supplementary files* are available [2].

# Ethical conduct of research

This original work was pre-registered under the OSF Preprints [8], please cite it accordingly [9]. This will ensure that researches are conducted with integrity and intellectual honesty at all times and by all means.

## Acknowledgement

+ **Center for Open Science**

<https://www.cos.io>

+ **Open Science Framework**

<https://osf.io>

## References

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