Foundations of Physics and Mathematics: Definition of Time and Space

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Abstract

Within “Solution to the Problem of Time I, II, III, IV, V and VI, [1,2,3,4] the author showed the idea to step forward to a new mathematics and physics based upon a nominal definition of space-time, represented by the only mathematical constant “π”, from which all physical natural constants like speed of light, gravitational constant, Planck’s constant, elementary charge... etc) can be derived. In fact, with the discovery of the true nature of “time”, there are no “constants” in physics any more.

The dimension of time in physics

Stephen Hawking famously said

If we do discover a complete theory, it should in time be understandable in broad principle by everyone, not just a few scientists. Then we shall all, philosophers, scientists, and just ordinary people, be able to take part in the discussion of the question of why it is that we and the universe exist. If we find the answer to that, it would be the ultimate triumph of human reason — for then we would know the mind of God.

The units in physics we used to build our models are based on time (second), on which all other measures depend, (except the mol). It is not possible to unite Chemistry and Biology therefore with general relativity and quantum theory as general Relativity and Quantum Theory can never be united in one theory as long as they use different concepts of the unit “second” of time.

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Today, the second of time is defined as

The second, symbol s, is the SI unit of time. It is defined by taking the fixed numerical value of the caesium frequency \( \Delta \nu_{\text{Cs}} \), the unperturbed ground-state hyperfine transition frequency of the caesium 133 atom, to be 9192631770 when expressed in the unit Hz, which is equal to s⁻¹.

The discovery of the real physical nature of time makes it possible to finally define the connection between space and time. In “Solution to the Problem of time” [1] the author exchanged Einsteins postulate of the constancy of light with the postulate that space must be proportional to time (Which then is cause for the effect of the constancy of speed of light).

**Definition of a second of time**: A second of time is the duration (circumference) between location A and B while the meter of space is defined as the distance between location A and B

\[
\text{second of time} = \text{meter of space} \cdot \pi
\]

**Definition of a meter of space**: A meter of space is the distance (diameter) between location A and B while the second of time is defined as the duration (circumference) between location A and B

\[
\text{meter of space} = \frac{\text{second of time}}{\pi}
\]
DEFINITION OF TIME + SPACE

\[ \eta = \frac{\text{time } AB}{\text{space } AB} \]

\[ \eta = \frac{\text{time between A and B}}{\text{space between A and B}} \]

EINSTEIN 4D-SPACE TIME:

\[ \begin{align*}
\text{Configuration} \quad & \quad 3 \text{-dim Space} \\
1 \text{-dim Time} & \quad \nabla \end{align*} \]

NEW 5D-SPACE TIME

Correct: \[ \eta = \frac{\text{time}}{\text{space}} \]
References


3. Pohl M U E 2020 :It takes a Decision to Decide if Decidability is True or False,: https://fqxi.org/data/essay-contest-files/Pohl_It_takes_a_Decision_to.pdf
