

Watches Paradox - The True Theory 100 Years Later

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Abstract - Finally this true theory correctly explains the dilation of time: "The difference of INERTIA observed in two references at different speeds is that it determines the time dilation between the two references."

It's scientifically proven. There's no doubt. Time dilates on the clock. Einstein was right. Two identical watches but compared at different speeds register different times. The different speed changes the time on the clock. But why?

But what is the cause? Einstein did not explain the physical cause. No one explains why the phenomenon of time dilation occurs. So my theory explains why the phenomenon happens. Is easy. How did I understand the cause of time dilation in clocks? Like this:

Whenever two synchronized clocks A and B register different times at the same time, if we consider that there is no gravitational field action the two clocks are in different movements ie clock A and clock B are at different speeds. If clock A is at rest and clock B is at high speed, according to physics at high speed produces kinetic energy and, according to Einstein, energy has inertia too, so kinetic energy has inertia. Inertia is the property that matter has to oppose to the change in its state of rest or movement. Therefore, the inertia of clock B is greater than the inertia of clock A that is at rest. Therefore, the clock at rest will rotate faster and register a longer time than the clock B which, due to its high inertia, has its delayed rotation. Inertia is the cause of the difference of the turns in the paradoxes of the clocks in different movements.

Twins Paradox Story - What's the Cause? Inertia is the cause.

In the history of the Twins Paradox occurs inertia in referential as the cause of time difference. The clock of the twin that lies on the Earth at rest has less inertia, the clock rotates more often and records more time, the twin ages. The traveling twin's clock has greater speed and has more inertia, his watch turns slower and the clock slows down, makes shorter time and he stays younger than his brother. What was the cause of the time dilation? They were the different inertias in the two different references. See a current scientific proof that shows inertia as the cause of time dilation.

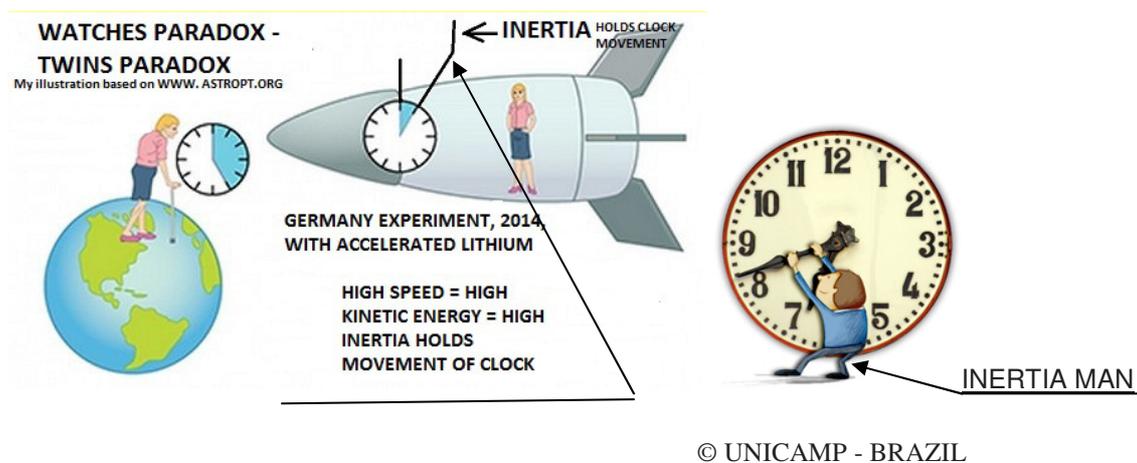
In 2014, experience of physicists in Germany for 15 years confirmed the dilation of time - I understand inertia was the cause of time dilation.

To check the effect of time dilation, physicists compared how time progresses in two clocks: one stopped and the other moving. For this purpose, physicists used a particle accelerator at the Helmholtz GSI Center in Darmstadt, Germany, where heavy ions are studied. In the experiment, physicists used accelerated

lithium ions at one-third the speed of light (100,000 km / s) as a moving clock. State-of-the-art technology, extremely accurate, has enabled physicists to measure electron transitions between different energy levels within the moving lithium ions. These transitions functioned as the ticking of a moving clock. For the clock at rest, the scientists made the same measurements, but in lithium ions stopped, at rest, which allowed to compare the speed in the electronic transitions in each case. The result showed that the electronic transitions occurred more slowly in moving ions. Experience has proven that time passes more slowly when the clock is at great speed. Certainly the inertia of the lithium reference at rest was smaller than the inertia of the lithium reference in motion. The lithium in motion had high kinetic energy and therefore great inertia, so the great inertia hampered the electronic transitions and with fewer transitions the recorded time is shorter. Then the inertia expands the time in lithium in motion comparing it with lithium at rest.

DILATING TIME IN THE MUON PARTICLE: THE CAUSE ALSO IS INERTIA

There is dilation of time in nature. The muon particle, at rest, only exists for 2,2 microseconds before decaying into electron and neutrino. But when it reaches speed close to the speed of light when it is originated by the cosmic rays in the collisions with the atoms of the atmosphere the muon particle exists by 36 microseconds or 18 times more than its normal time at rest. Why does this happen? Due to the high speed, high **kinetic energy** is generated in the muon. The high energy produces the high inertia (energy has inertia), so the high inertia hinders and opposes the transitions of muon decay transformations and at high speed (high inertia) it exists for time 18 times longer than the muon at rest. Here again, I understand the difference between two references of inertias causing the dilation of time. Short inertia at rest is as time 2,2 microseconds, inertia at the muon almost speed of light is as almost 36 microseconds as life of muon particle before decaying. **This is the law of dilation time: “The difference of inertia observed in two references at different speeds is that it determines the time dilation between the two references”.**



<https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.113.120405>
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