

# **Kinematic time dilation without Relativity or light – and why Faster-Than-Light travel is possible without wormholes or warp drive: simple math of information use**

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Here is the gist of why Faster Than Light travel is possible, and why Einstein's Relativity still yields correct results when checked against experiments - even though the two statements appear to be contradicting each other. The short answer is that the great mass of Earth has everything to do with it, and by far most experiments are conducted on, or near, such large celestial bodies. In deep space, Einstein's Relativity will not always hold. Whether it holds or not depends on the mass of objects involved, and their distances.

*Important:* This is given as an illustration only, with all statements squarely presented without proof, for which you'll need to read the paper. Many details, including General Relativistic effects, are missing.

Consider information content of a physical particle, let's denote it as  $i$ , and suppose that a particle keeps two instances of this content: one from just a moment ago, and one from the present moment. Each instance of this content describes the information a particle uses in each moment in time, the result of which is the acceleration of a particle.

The  $i$  we use to denote information content is a number of facts comprising information content. When two such sets of facts interact, effectively combining past and present information to create future information, the number of interactions is:

$$H_0 = i \times i = i^2 \quad (1)$$

and the throughput is in a time interval  $\Delta t$ :

$$T_0 = \sqrt{i \times i} / \Delta t = i / \Delta t \quad (2)$$

When a particle moves relative to a large isolated mass, the amount of information available to it increases, because it visits more locations that contain more information that is available in space, and so it is proportional to relative speed:

$$\Delta i / i = s \times v \quad (3)$$

In this case, there is more information collected in the present moment (by amount of  $\Delta i$ ), and consequently, some information from the previous moment must be discarded. The number of interactions now is:

$$H = (i - \Delta i) \times (i + \Delta i) = i^2 - (\Delta i)^2 \quad (4)$$

and the throughput is in time interval  $\Delta t$ :

$$T = \sqrt{(i - \Delta i) \times (i + \Delta i)} / \Delta t = \sqrt{i^2 - (\Delta i)^2} / \Delta t \quad (5)$$

In general, regardless of the amount of additional information  $\Delta i$ , this throughput is equal when measured by a physical clock, in small time intervals:

$$\sqrt{i^2 - (\Delta i_1)^2} / dt_1 = \sqrt{i^2 - (\Delta i_2)^2} / dt_2 \quad (6)$$

From (3) and (6):

$$dt_1 / dt_2 = \sqrt{\frac{1 - s^2 \times v_1^2}{1 - s^2 \times v_2^2}} = \sqrt{\frac{1 - v_1^2 / c^2}{1 - v_2^2 / c^2}} \quad (7)$$

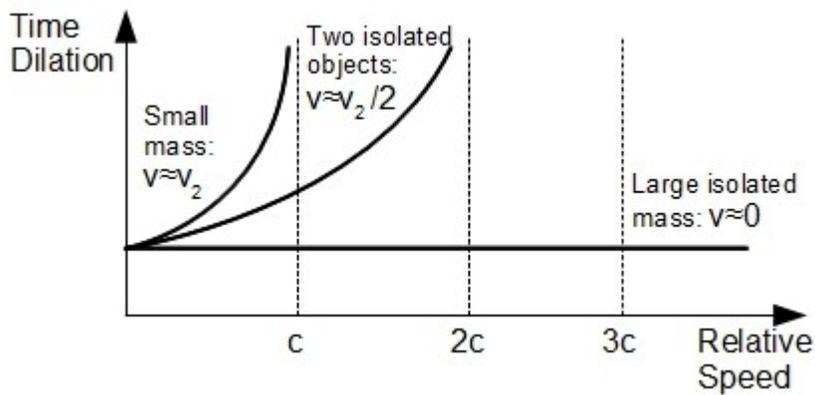
This is time dilation from Special Relativity, **derived without notions of light or Relativity**. This is the revolutionary step beyond Relativity, as anyone with passing knowledge of it can appreciate obtaining time dilation without knowing that light, mass or any form of relativity even exist – only by using trivial notions of information use.

In general, the speed in (3) is not spatial speed, but rather so-called *information speed*, which in the case of a small particle nearby large mass like Earth reduces to spatial speed, and is given by:

$$v = \frac{1}{\sum_{j=1}^U m_j / R_j^2} \times \sum_{j=1}^U v_j \times m_j / R_j^2 \quad (8)$$

where we account for mass, distance and relative speed of *all* objects in existence that contribute information content to a particle. This is the consequence of removing external observers from any formulation of a fundamental physical law, i.e. the consequence of *locality* of physical laws.

From this, because distances and masses of objects now enter the Equation (7), the time dilation remains the way it is described in Einstein's Relativity only in some corner cases, such as near massive bodies like Earth. In general, such as for example, away from massive bodies, and especially for objects more massive than a few million tons, the time dilation (and mass increase) effects slowly fade away as the distance from celestial objects increases:



where  $v_2$  is the spatial speed relative to a large isolated mass, and  $v$  is information speed.

As a result, FTL is possible, with any available propulsion system, *if* an object accelerating is massive and if it is far away from celestial bodies. In other words, an artificially constructed massive object departing Earth, can move *in deep space* faster than 300,000 km/s relative to Earth. Note that such a voyage has *never* been done, and if you have heard that nothing can move faster than light, it is a speculation. It is assumed that nothing can move faster than light, based solely on experiments performed *near* Earth and the Sun. Everything else is a conjecture, including Relativity, and until proven so, this theory as well.

Note that Relativity and the theory presented here have nothing in common. Thus, the crossover of statements from one to the other is meaningless. In other words, arguing the impossibility of conclusions we reached, because Relativity prohibits it, is utterly meaningless. Our theory is an *alternative* to Relativity, and as such, *cannot* be judged by it. It can only be judged by new experiments, since all experiments to-date agree with both theories. Seeming impossibilities arising in Relativity are resolved here without time travel or infinite physical values.