

Explaining Why No Object or Person Can Travel Faster Than the Speed of Light

"I know not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones" - Albert Einstein (1879 - 1955)

"The hardest thing in the world to understand is the income tax" - Albert Einstein (1879 - 1955)

Finite Light Speed in Special Relativity

If, for example, any object or person travels away from any stationary observer, the finite amount of photon light emanating from the travelling object or person will never reach into the eyes of the stationary observer due to the finite speed of light. Hence, even if possible, the travelling object or person *will simply disappear* into a background of blackness! Perhaps into the realm of "Elsewhere" as is shown in the geometry of [Minkowski's Sphere of Light](#).

Here's another way to look at it: if a body of mass were to travel faster than the light emanating from it, the body of mass would be invisible! Since it would surpass its own light! It would be even beyond pure energy, in other words. Nothing therefore can exceed the speed of light.

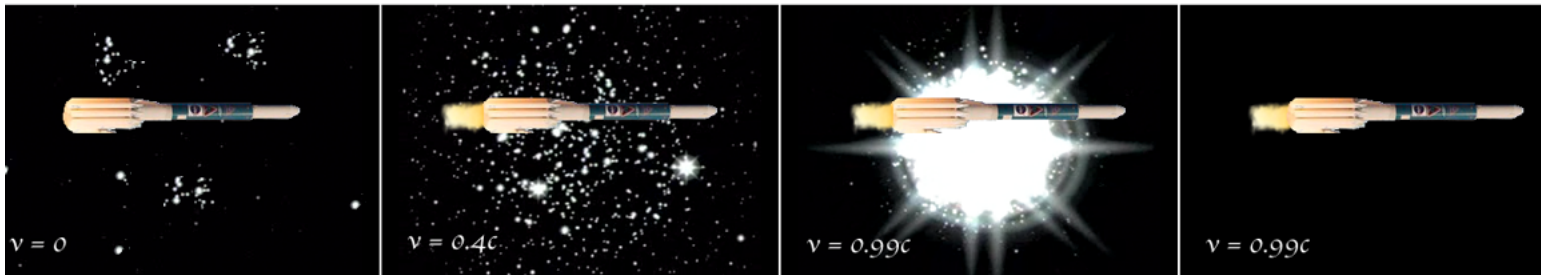
But the more salient argument against any body of matter exceeding the speed of light comes from

$$\overbrace{E = mc^2}^{\text{total energy}} = \frac{m_0 c^2}{\sqrt{1 - \frac{v^2}{c^2}}} \approx \overbrace{m_0 c^2}^{\text{rest energy}} + \overbrace{\frac{1}{2} m_0 v^2}^{\text{kinetic energy}}$$

whose equation arises from special relativity. By simply observing that even if any body of matter equals the speed of light in its velocity, then implausibly its mass would become infinite and the amount of energy required to sustain its velocity equally becomes infinite! All of which is impossible since all the rest of the available *finite* amounts of energy in the universe would thus be absorbed in just getting one, singular, body of matter to travel at the finite speed of light, never mind exceeding it!!

Some Shadowy Adumbrations of Peripheral Light (or what the external world looks like to the inside rocket goer)

Relativistic Beaming Effect



Floating in space

Forward looking at stars
(headlight effect)

Forward looking at stars approaching c
(headlight effect)

Backward looking at stars approaching c
(what earth will see at the Big Freeze)

"It follows from these results that to an observer approaching a source of light with the velocity c , this source of light must appear of infinite intensity", Albert Einstein, seminal 1905 paper

That is, for the "inside" rocket goer going at the speed of light, only incoming light will be observed while at the periphery of the Relativistic Beam Effect only shadowy outlines may perhaps be seen. For the imaginary rocket goer exceeding the speed of light, only blinding incoming points of forward light will be visible, if that, while everything else surrounding the rocket goer will become total blackness by this self - imposed, self - created *black hole* !

Finite Light Speed in General Relativity

Now when we add in the non - inertial acceleration effects of gravity upon any body of matter *travelling at the speed of light*, we find from Einstein's famous gravity equation

$$\text{geometry} \left\{ \begin{array}{l} G_{ik} = R_{ik} - \frac{1}{2} g_{ik} R + \Lambda g_{ik} = -\kappa T_{ik} \end{array} \right\} \text{physics}$$

↑ tells gravitational spacetime how to curve
↑ tells matter how to move
 (distribution of matter and energy)

that "Greater Amounts of Gravity (space - time curvature) equals Greater Amounts of Energy" are required. That is, the "more tightly wrapped spacetime, the greater amounts of energy involved". Therefore more accelerating gravity additional to what herefore has been explained, requires more energy coming out of the rest of the universe which, because of the Law of Conservation of Energy, means that everything else in the universe becomes devoid of mass - energy! In effect a "Singularity of Mass - Energy" in a Cosmic Desert of Nothingness devoid of Anything Else! Perhaps possible at the nano - moment of the Big Bang, but not thereafter! Not in our present, aged 13.73 billion years world of our universe.

Practically Speaking

The faster you go, the more energy is required. As you speed up, your mass - energy increases. You can feel this when travelling in a fast car as you get pushed ever increasingly into the back of the seat. Just ask an astronaut if you don't believe it. Now travelling beyond a certain point of speed, there's a *diminishing return* of how much extra energy is required in order to gain just a bit more

speed. And the upper limit to this *diminishing return effect* is, indeed, the speed of light!

Have a nice Relativity Light Day!

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