

Re: Questions on faster than light

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On Aug 16, 4:14 pm, madscientist <madscientist5...@xxxxxxxxx> wrote:

Hey guys. First off, I'm no physicist, so forgive my ignorance if it applies.

I've been asking myself this question... If the laws of Physics dictate that nothing can travel faster than light, how can objects in the universe be so vastly separated? Did it not take a faster-than-light instantaneous expansion to get celestial objects and galaxies to where they are now? Take galaxies, for example, which are millions to billions of light years separated from one another. How long did it take for these galaxies to become so far apart? Wasn't the rate of expansion faster than light at some point in the distant past?

I don't know, it seem to me that space exploration would be completely impractical using methods at sublight speeds. It would take millions of years to even reach the nearest galaxies.

You will need to get your head around a concept named the metric expansion of space.

http://en.wikipedia.org/wiki/Metric_expansion_of_space

The space in between two objects expands. The objects themselves are not moving rather the space is getting bigger. Think of a balloon being blown up. Two dots on the surface of the balloon get further apart as the balloon gets bigger. The dots themselves are not moving. In contrast, a bug crawling on the expanding balloon would be moving. This leads to recession speeds which exceed the "speed of light" c . Einstein's first signal principle for light is not violated because the objects are not moving faster than light. Speed is a local measurement.

Exponential expansion (inflation) means that the physical distance between any two non-accelerating observers will eventually be growing faster than the speed of light. At that point those two observers are no longer able to make contact. We say that each observer sees an event horizon beyond which we have no information. The event horizon is the edge of our local universe but not the edge of *the* universe.

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I hope this helped.

--Mike Jr

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