

## Audio Time Machine

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Obviously the most famous theory of physics of all time is the 'Theory of relativity' given by Einstein. It's a kind of theory which has changed almost the whole picture of physics. One of the main postulates of this theory was that nothing can move faster than light, which means that light has the ultimate velocity. If someone moves at a very high velocity near the velocity of light then one would travel faster in the fourth dimension, which is time. That is where the concept of time machine has come from.

Everything that we see is just due to the rays of light reflected from objects. Light from some source strikes an object and the object reflects it. When the reflected light rays come to the contact of our eyes we can see the object. So we can simply say that "Every time we see something, actually we see its past". Because it takes some time for the reflected rays to come from the object to our eyes. Now suppose someone is standing in some position and he clapped his two hands. At that instant a wave front of light containing that particular event (clapping his hand) will start spreading over every direction with the velocity  $C$  ( $3.00 \times 10^8$  m/s). If we consider that the man can move faster than light then if immediately after clapping his hands he starts running with a velocity greater than that of light. So at some time he will overtake the reflected light wave front and will be able to see himself. This means he will see his past. But our intuition says that this is not correct (although intuition may fail).

But we can have some other idea of relativity. As compared to the velocity of light, the velocity of sound is quite less and overcoming the velocity of sound has some real sense. Now suppose the same event of the man clapping his hand. At that same instant a wave front of sound will be generated which will be spread over equally and uniformly in exactly every direction (provided there is a medium to propagate sound and has a uniformity.) Now if the man starts moving faster than the sound wave, then after some time he will be able to overtake the wave front of sound of that particular event. Now if he gets the wave front he will listen to the past. So from this philosophy we may name it as the audio version of the time machine.

But the main problems here is caused by losses occurred in case of sound wave during its propagation. While propagating through a medium its wavelength increases and hence its frequency decreases resulting in a net decrease of the energy of the sound wave. But we may somehow build a device that will recover exactly the same form of the sound wave. The device will amplify the wave. So we actually need a special type of amplifier. If the amplifier consists of a device that can capture waves with high selectivity then the idea will be very effective and real one.

This idea also introduces us the hardware free memory device. Whenever a sound is generated it actually remains in the universe forever (may be in another form). So if we collect such a signal, amplify it then we can get the original version.

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