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# Doppler effect

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The Doppler effect of the light is a proof that light speed is relative.

For frequency:

$$f = f_0 \frac{c + v_D}{c + v_E}$$

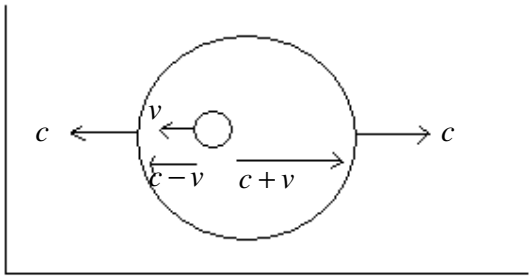
$v_D$ -- Detector speed; $v_E$ -- Emitter speed

For time:

$$\Delta t_B = \Delta t_A \frac{c}{c \pm v}$$

$$\Delta T = \Delta t_B - \Delta t_A = \Delta t_A \frac{v}{c}$$


$v = 3 \times 10^4 \quad \Leftrightarrow \quad \Delta T = 10 \mu s$




Relative speed to the emitter.

If light speed is absolute there will be no Doppler shift.
A relative speed can be faster than light.

## Force aberration

If there is aberration of the forces, electric force orbits must be unstable.
Between an electron and a proton there's no aberration because the interaction happens at half distance of the two particles.

Both particles have the same delay.

The gravity is the electric force between dipoles.
The speed of gravity is almost equal to light speed.
The particle responsible for the macroscopic mass is the proton.
Speed of the field of the proton:

$$w_P = 2.99755365 \times 10^8$$