

## THE SPEED OF ELECTROMAGNETIC RADIATION

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### ABSTRACT:

The physical nature of the speed of light is discussed and the so called “Relativity Principle” is defined and discussed.

### ASSUMPTIONS:

1. Light is one form of electromagnetic radiation which may or may not be radiation identical to Radio, X, Gamma, and Delta (see [www.k1man.com/a16](http://www.k1man.com/a16) ), except for wave length, as defined by  $\lambda = c/f$  where  $f$  is frequency of the radiation when considered as a wave disturbance and  $E = hf$ .
2. The speed of light  $c$  is not constant, relative to any observer, as postulated by Dr. Einstein.

### ARGUMENT:

Consider a light pulse of infinitesimal duration  $dt$  emitted in a total vacuum without the influence of gravity, magnetic, electric, or other electromagnetic fields at time  $t_1 = 0$  from a source\* at location  $s_1$ . The light will travel a distance  $(s_2 - s_1) = (dt)(c)$ . As soon as the light leaves the source at  $s_1$ , it is totally independent of the source EXCEPT for the fact that the location of the source at  $t_1$  is DEFINED as the distance  $(tN)(c)$  in the opposite direction from the velocity of the light at  $tN$ .

Thus, the independently travelling light is, de facto, DEFINING an absolute location  $S_1$ . Call this point A. Call point D the destination of our light pulse. If point A and point D have no relative velocity, then the relative speed of light between A and D is  $c$ . If A and D are getting closer and have a relative velocity of  $v$ , then the relative speed of light between A and D is  $c + v$ . If A and D are getting further apart and have a relative velocity of  $v$ , then the relative speed of light between A and D is  $c - v$ .

Since we have defined  $S_1$  in this case as “absolute,” as determined and defined “absolute” by the independent light pulse, we have ignored as irrelevant the history of acceleration or velocity of the source before time  $t_1$ .

The writer thus defines his principle of relativity: If points A and D, as defined above, have relative velocity  $v$  such that they are getting closer, the mathematical models of A being “fixed” and D moving so as to meet the light pulse “part way” making the relative velocity of the light pulse between points A and D to be  $c + v$ , is equivalent to the mathematical model of point D being “fixed” with point A moving toward point D at velocity  $v$  such that the pulse mathematically “takes on” velocity  $v$  so that the relative velocity of the light pulse between points A and D is still  $c + v$ .

The purpose of this contrived mathematical model is to help scientists to visualize the following relativity principle phenomena: If point E is approaching point G with velocity  $v$  and point F has no relative velocity with respect to G, simultaneous pulses of light from points E and F, when E and F are the same direction and distance from G, will not arrive at G at the same time; the pulse from E will arrive first, and this is consistent with the fact that the speed of light relative to any observer is not constant.

The non constant speed of light, relative to any observer, is the fundamental problem with Special Relativity. See [www.k1man.com/c1](http://www.k1man.com/c1)

## THE ENIGMA

The enigma here is how light is able to independently propagate, de facto, relative to the original absolute location of the source. It travels as though it “leap frogs” from point to point during time  $dt$ ,  $(2)(dt)$ ,  $(3)(dt)$ , and so on, without the need for a medium such as an aether of some kind. This writer rejects both the need for or the actual existence of an aether.

Free space, however, is not ideal, as described above. Free space, or even on or near the surface of the earth, contain so called fields such as gravity, magnetism, electric, and electromagnetic as well as particles and neutrinos. Such must also be considered when talking about real world electromagnetic radiation.

## REFERENCES:

[1] Dr. Daniele Sasso ([www.k1man.com/k](http://www.k1man.com/k) )

[2] Glenn A. Baxter, P.E. ([www.k1man.com/v](http://www.k1man.com/v) )

\* Radio, light, X, Gamma, and Delta radiation are all generated by different processes or generators which seem to have the common nature of electrons (whatever that means) being accelerated or decelerated, either gradually or abruptly.

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[www.k1man.com/physics](http://www.k1man.com/physics)

***“To kill an error is as good a service, and sometimes even better than, establishing a new truth or fact.”***

***Charles Darwin***

"Great causes are never tried on the merits; but the cause is reduced to particulars to suit the size of the partisans, and the contention is ever hottest on minor matters." - Ralph Waldo Emerson - From his essay "Nature" 1844



Glenn A. Baxter, P.E., at his home in Belgrade Lakes, Maine U.S.A.

See [www.k1man.com/g](http://www.k1man.com/g)



Glenn A. Baxter, P.E., age 4, with his dad, Frank H. Baxter (Bachelor of Science Degree, Mechanical Engineering, 1914, Rhode Island State College), and President of Frank H. Baxter Associates, 370 Lexington Avenue, New York City. See [www.k1man.com/fhb](http://www.k1man.com/fhb) and also [www.k1man.com/w10](http://www.k1man.com/w10) and [www.k1man.com/Loons](http://www.k1man.com/Loons)