Do all types of electromagnetic waves propagate with same speed?

Answer:

In a vacuum electromagnetic waves always propagate with the same speed - speed of light. In other mediums, like air or glass, the speed of propagation is slower. If the speed of light in a vacuum is given the symbol c_0, and the speed in some a medium is c, we can define the index of refraction, n as:

$n = \frac{c_0}{c} > 1.$

What is the phase difference between electric field and magnetic field vibrations?

Answer:

In natural light the phase difference between such components changes continuously and randomly. In completely polarized light this phase difference is strictly constant.

One such case is linear polarization; the phase difference here is 0 or kπ, where k is an integer. The other case is circular polarization, where the phase difference is $\pm\frac{(2k+1)\pi}{2}$.

Does the direction of electromagnetic wave propagation same as the direction of vibration of electromagnetic waves?

Answer:

No, because electromagnetic waves are transverse waves. In a transverse wave, the direction f particle displacement occurs perpendicular to the direction of wave propagation.