**Characteristics of Electromagnetic Waves**

***Some of the important characteristics and properties of electromagnetic waves are:***

* Electromagnetic waves are transverse in nature as they propagate by varying the electric and magnetic fields such that the two fields are perpendicular to each other.
* Accelerated charges are responsible to produce electromagnetic waves.
* Electromagnetic waves have constant velocity in vacuum and it is nearly equal to 3×108ms−1.
* Electromagnetic wave propagation does not require any material medium to travel.
* The inherent characteristic of an electromagnetic wave is its frequency. Their frequencies remain unchanged but its wavelength changes when the wave travels from one medium to another.
* The refractive index of a material is given by:n = √μrϵr
* Electromagnetic wave follows the[principle of superposition](https://byjus.com/physics/superposition-principle-and-continuous-charge-distribution/).
* The light vector (also known as the electric vector) is the reason for the optical effects due to an electromagnetic wave.
* In an electromagnetic wave, the oscillating electric and magnetic fields are in the same phase and their magnitudes have a constant ratio. The ratio of the amplitudes of electric and magnetic fields is equal to the velocity of the electromagnetic wave.C = E0B0
* The energy is carried by the electric and magnetic fields of electromagnetic waves are equal, i.e. the electric energy (uE) and the magnetic energy (uM) are equal; uE = uM.

