

EC-7 / Polarisation - The orientation of electric and magnetic field in the particular direction is known as polarisation.

Types of polarisation of EMWs -

1. Linear Polarisation
2. Circular "
3. Elliptical "

1. Linear Polarisation -

When the electric field components E_x and E_y are in phase with each other, the resultant electric field

$$\vec{E} \text{ is given as } \vec{E} = E_x \vec{a}_x + E_y \vec{a}_y$$

$$|\vec{E}| = \sqrt{E_x^2 + E_y^2}$$

$$\therefore \theta = \tan^{-1} \left(\frac{E_y}{E_x} \right)$$

Now, $|\vec{E}|$ is called linear. The resultant vector is called linear, if the magnitude and the phase of the vector is constant with time, then the wave is said to be linearly polarised.



Fig ① Linear Polarisation