Topic: Equation of Plane progressive wave – A plane progressive harmonic wave equation describes the displacement (y) of particles in a medium as a function of position (x) and time (t), The transferring energy without altering its waveform. The fundamental equation of plane progressive wave are expressed as,

$$y(x,t) = A \sin(kx - \omega t + \phi),$$

where, A = Amplitude of wave
k = Angular wave number $(\frac{2\pi}{\lambda})$
ω = angular frequency $(\frac{2\pi\nu}{\lambda})$
and, $(kx - \omega t)$ is the phase.

The mathematical forms of plane progressive wave are expressed as,
(in the positive direction)

$$y(x,t) = A\sin(kx - \omega t + \phi') \quad \text{—(1)}$$

and in the negative x-direction.

$$y(x,t) = A\sin(kx + \omega t + \phi) \quad \text{—(2)}$$

These above two equations are known as- Equation of plane progressive wave.