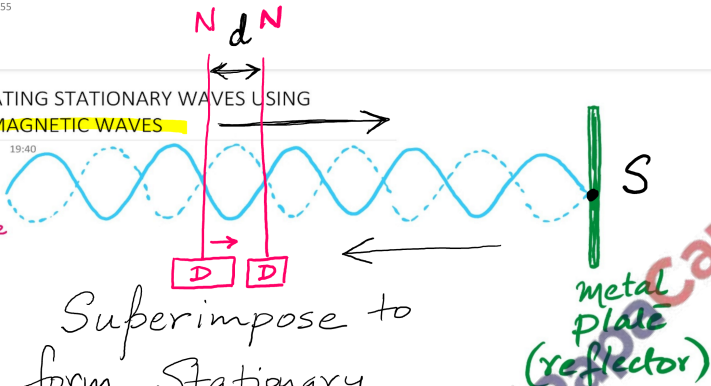


INVESTIGATING STATIONARY WAVES USING
ELECTROMAGNETIC WAVES

07 February 2021 19:40

Microwave emitter



Superimpose to
form Stationary
Waves:

$$N \text{ to } N = \frac{1}{2} \lambda$$

$$\frac{1}{2} \lambda = d$$

$$\lambda = 2d$$

$$\text{freq.} = \frac{v}{\lambda} = \frac{3 \times 10^8}{2d} = \frac{1.5 \times 10^8}{d}$$

The arrangement shown is used.

Microwaves of constant frequency are emitted by the source and are reflected from a point S on the reflective surface (metal plate).

The superposition will give rise to the formation of stationary waves.

If a detector is moved between the source and the reflector, the reading varies from maximum to a minimum and then back to a maximum value.

Each minimum intensity corresponds to a NODE.

Each maximum intensity corresponds to an ANTINODE.

Using the above principle, the wavelength and the frequency can be determined as shown below.