coherent sources and sustained interference of light

CLASS-XII

SUBJECT : PHYSICS
CHAPTER NUMBER: 10
CHAPTER NAME : Wave Optics

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LEARNING OUTCOME

- Understand the coherent sources.
- To study about sustained interference.

Coherent Sources:-

Two sources emitting continuous light waves of the same frequency and wavelength are said to be coherent if the sources are at the same phase or have a constant phase difference.

Two independent sources of light can't be coherent

Coherent sources are obtained from a single source of light:-

Generally by two methods

(a) Division of wavefronts:- For example in Young's double-slit experiment, Lloyd's mirror experiment, Fresnel's biprism experiment

(b) Division of amplitude:- e.g in thin films like soap film, in Newton's ring and Michelson's interferometer.

Sustained Interference

Conditions of sustained interference:-

(a) Sources must be coherent

(b) Sources must be monochromatic

(c) Sources must be very close to each other

(d) Sources should emit light of same intensity

(e) Sources should be narrow or point sources

THANKING YOU

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