S.G.V.C Vidya Prasarak Trust's

# M.G.V.C ARTS, COMMERCE AND SCIENCE COLLEGE MUDDEBIHAL

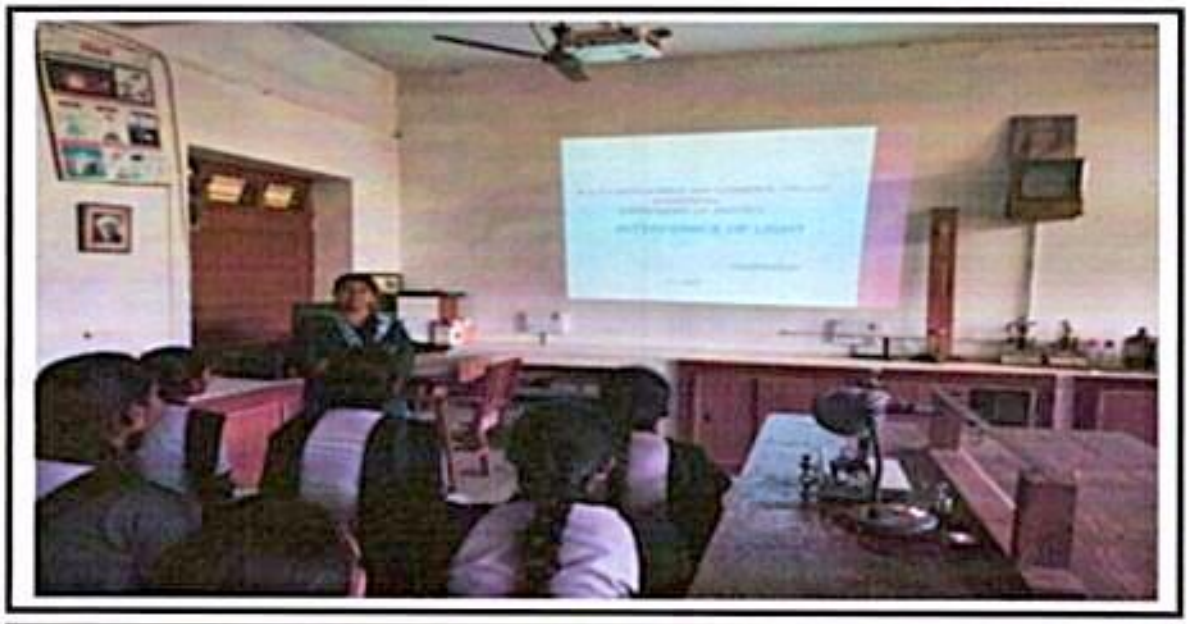
## DEPARTMENT OF PHYSICS

**Teachers Use ICT enabled tools for Effective teaching learning process**

**Name of the Staff Member: Prof-Ashwini Akki**

**Topic- Inteference of Light**

**Class: B.Sc -III Semester** **Date: 23.11.2024** **Time: 9.30 to 10.30 am**

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# M.G.V.C ARTS, COMMERCE AND SCIENCE COLLEGE MUDDEBIHAL

## DEPARTMENT OF PHYSICS

M.G.V.C ARTS,SCIENCE AND COMMERCE COLLEGE
MUDDEBIHAL
DEPRTMENT OF PHYSICS

# INTERFERNCE OF LIGHT

PRESENDED BY
A.I.AKKI

## INTERFERENCE

Interference is an effect that occurs when two or more waves overlap. ▫In general, the individual waves do not affect one another, and the total wave amplitude at any point in space is simply the sum of the amplitudes of the individual waves at that point.

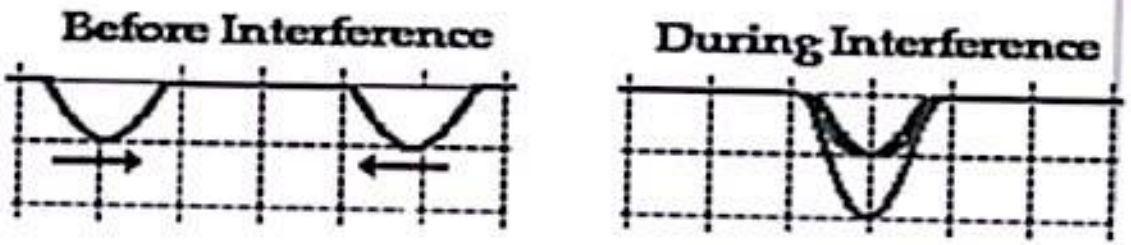
## TYPES OF INTERFERENCE

- Constructive interference
- Destructive interference

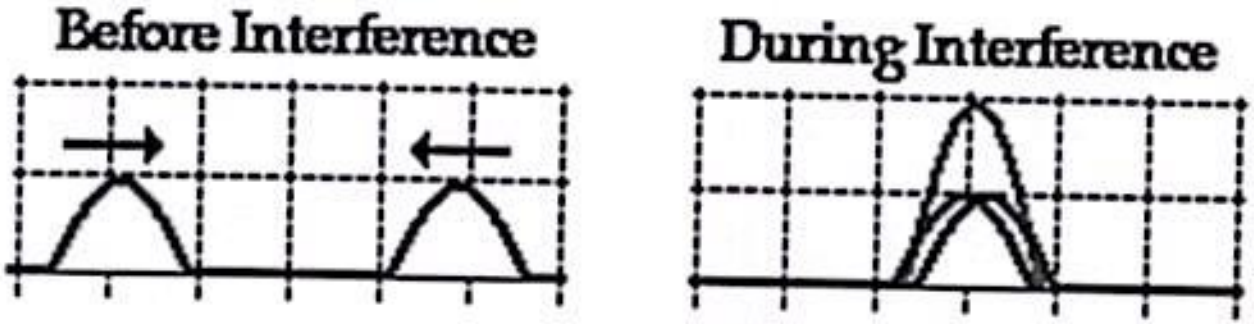
## Constructive Interference

It is a type of interference where the two interfering waves have a displacement in the same direction

- Constructive interference is observed at any location where the two interfering waves are displaced upward

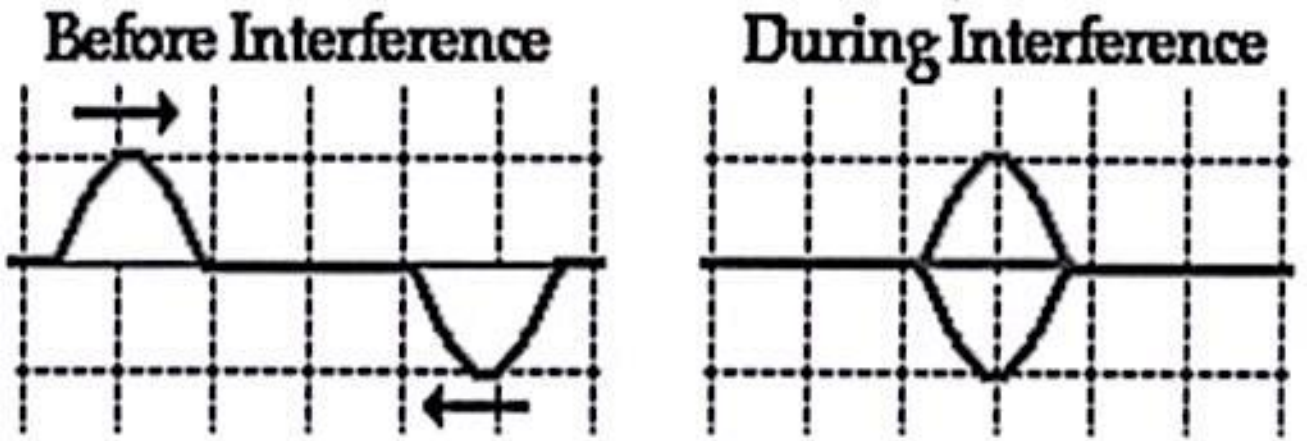



- It is also observed when both interfering waves are displaced downward



## Destructive Interference

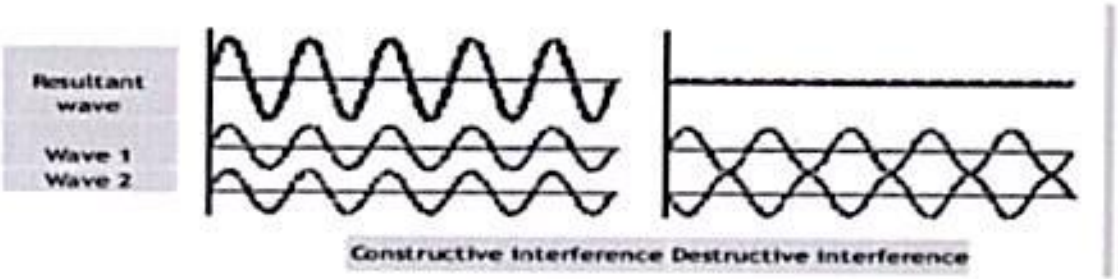
It is a type of interference where the two interfering waves have a displacement in the opposite direction.



# Principle of superposition

- The principle of superposition of waves states that when two or more waves are incident on the same point, the total displacement at that point is equal to the vector sum of the displacements of the individual waves.
- If a crest of a wave meets a crest of another wave of the same frequency at the same point, then the magnitude of the displacement is the sum of the individual magnitudes, this is constructive interference.

- If a crest of one wave meets a trough of another wave then the magnitude of the displacements is equal to the difference in the individual magnitudes, this is known as destructive interference.




- Constructive interference occurs when the phase difference between the waves is a multiple of $2\pi$

- Destructive interference occurs when the difference is an odd multiple of π
- Interference is a phenomenon in which two waves superimpose to form a resultant wave of greater or lower amplitude

If the difference between the phases is intermediate between these two extremes, then the magnitude of the displacement of the summed waves lies between the minimum and maximum values.

Mechanism

1. Between two plane waves
2. Between two spherical waves
3. Radio
4. Optical interference

Interference effects can be observed with all types of waves, for example

Light

Radio

Acoustic

Surface water waves

# THANK YOU