

Light Principles

CHAPTER (1) INTRODUCTION TO WAVE MOTION

A brief history of light

One- dimensional waves

Harmonic waves

Phase & phase velocity

The complex representation

Plane waves

Dimensional differential wave equation

Spherical waves

Cylindrical waves

Scalar & Vector waves

CHAPTER (2) PHOTONS & LIGHT BASIC

Laws of electromagnetic theory

Electromagnetic waves Nonconducting media

Energy & Momentum

Radiation

CHAPTER (3) THE PROPAGATION OF LIGHT

Laws of reflection & refraction

Interaction of light & matter

Stockes treatment of reflection & refraction

Photons & laws of reflection & refraction

Particle & wave nature of light

Dual nature of light

CHAPTER (4) PARAXIAL THEORY & IMAGING

Lenses , Stopes , Mirrors , Prisms , Fiber Optics , Light pipes

CHAPTER (5) COHERENCE THEORY

Visibility

Mutual coherence function & the degree of coherence

Coherence & Stellar interferometry

CHAPTER (6) SOME ASPECTS OF LIGHT

Absorption , Emission , Scattering , Colors & dyes , Fluorescence ,
Illumination , Attenuation .