

# 7. Optical Fiber

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Some mathematical representations are given for :

7.1 Electromagnetic wave guided in an optical fiber

7.2 Eigen value equation

7.3 Guided modes

Physical understanding of the following matter is important:

7.4 Group velocity and wavelength dispersion

(1) Material dispersion

(2) Waveguide (structural) dispersion

(3) Dispersion in a single mode fiber

7.5 Pulse compression and expansion due to nonlinear effect (SPM) and soliton