PH 2502 Term B 2017
Lasers R.S. Quimby

STUDY GUIDE 2

Readings:

Chapter 16 The concept of optical modes in an optical resonator is introduced. Detailed treatment is given of longitudinal modes (variation of light intensity along direction of beam propagation) in a laser cavity, and also for two closely spaced parallel plates (Fabry-Perot Interferometer).

Chapter 17 Here the transverse modes are considered. This describes the variation of light intensity perpendicular to direction of beam propagation. The most fundamental transverse mode is that of the Gaussian beam. The properties of Gaussian beams both inside and outside the laer cavity are discussed.

Homework #2 (due Nov. 7):

Problems from text

1. 16-2 (see Table 2-1 on p. 9 for GaAs index)
2. 16-4
3. 16-7
4. 16-8
5. 16-9 (Hint: determine an effective R_1R_2 that takes into account reflection losses at the semiconductor-air surfaces)
6. 17-4 (assume the beam is propagating in air)
7. 17-6 (in part c, find the spacing between adjacent modes, whether they are longitudinal or transverse modes)
8. 17-9
9. 17-11