

## Assignment 8

1. One method used to tune a dye laser is to change its optical length by pressurizing the cavity with a gas such as  $N_2$  or freon. For  $N_2$ , the index of refraction is 1.000278 at 760 torr. For a laser operating at 600 nm find:
  - a) tuning rate i.e. MHz/torr  $N_2$
  - b) total tuning of  $N_2$  is all pumped away
2. Another method to tune a laser is to change the cavity length. Consider a standing wave laser operating at 600 nm. By what fraction must the cavity length change in order of the laser to be tuned 10 GHz?
3. Considerable work is being done to develop arrays of diode lasers. Suppose each laser pulse has a maximum power  $P_0$ . What will be the maximum power of 100 mode locked diode lasers?
4. Read about gratings in Demtroder's book.