Laser Physics I (PHYS/ECE 464)

Homework #1, Due Wed., Sept. 7

Fall 2022

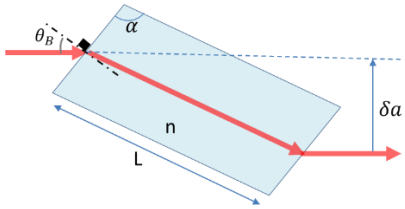
From *Verdeyen*:

1. Problem 1.4

2. Problem 1.5

3. Problem 1.7

4. A laser crystal (having refractive index n) and length L is Brewster cut such that the incident beam at θ_B emeges parallel to the crystal sides as shown in the Fig.



What is the angle α? What is the the beam's lateral deviation (δa) in terms of n and L?

5. Show that:

Photon energy $E(eV) \sim 1.24/\lambda(\mu m)$,

Electric field $E_0(V/cm) \sim 27[I(W/cm^2)/n]^{1/2}$,

where λ is the wavelength, I is the irradiance and n is the refractive index. *Try to memorize these useful relations.*