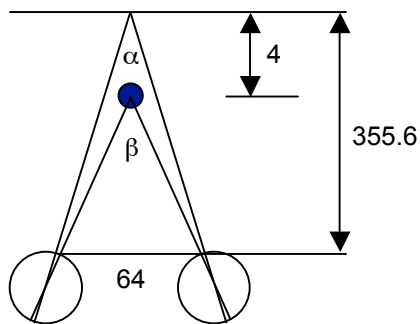


Solution to Lab 6 question

Estimate the disparity in a vectographic target that appears raised off the page. After you estimate the apparent height of the object above the page, there two ways to solve the problem: A) Using geometry and B) using the disparity formula.

Assume that the circle appears to be 4 mm above the page, the distance to the book is 14 inches (355.6 mm), and the patient's PD is 64 mm.

A. Geometric solution



1. You will want to find the difference between angles α and β . That is, disparity $\eta = \beta - \alpha$.
2. Compute the angular size of $\beta/2$.
 $\beta/2 = 32 / (355.6 - 4) = 0.09101$ $\text{atan}(0.09101) = 5.2003^\circ$
3. Compute angular size of $\alpha/2$.
 $\alpha/2 = 32 / 355.6 = 0.08999$ $\text{atan}(0.08999) = 5.1421^\circ$
4. Compute the difference: $\eta/2 = \beta/2 - \alpha/2 = 5.2003 - 5.1421 = 0.05818^\circ$
5. Multiply by 2 for η . $0.05818 \times 2 = 0.11636^\circ$
6. Convert to arc seconds: $0.11636 \times 60 \times 60 = 418.9''$

B. Disparity formula
$$\eta = \frac{PD(\Delta D)}{D^2} = \frac{64(4)}{355.6^2} = 0.0020245$$

This gives the answer in radians. Convert to degrees then arc seconds.

$$0.000316 \text{ radians} = 0.11599^\circ = 417.9''$$