CheckPoint 2b

If you wanted to see the EM wave produced by the iclicker with your eyes, which of the following would work? (Note: Your eyes are sensitive to EM waves w/ frequency around 10^{14} Hz)

A) ⊙ Run away from the iclicker when it is voting.
B) ⊙ Run toward the iclicker when it is voting.
C) ⊙ Neither will work, moving relative to the iclicker won't change the frequency reaching your eyes.
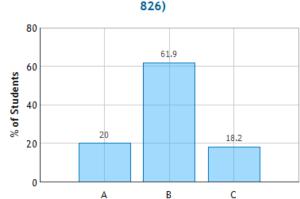
$f_{iclicker}$ = 900 MHz

Need to shift frequency UP ➡ Need to approach i>clicker $(\beta > 0)$

How fast would you need to run to see the i>clicker radiation?

$$\frac{f'}{f} = \frac{10^{14}}{10^9} = 10^5 = \left(\frac{1+\beta}{1-\beta}\right)^{1/2}$$

EM waves from an iclicker: Question 2 (N = 826)

$$10^{10} = \left(\frac{1+\beta}{1-\beta}\right) \longrightarrow \beta = \frac{10^{10}-1}{10^{10}+1} = \frac{1-10^{-10}}{1+10^{-10}}$$

Approximation Exercise: $\beta \approx 1 - (2 \times 10^{-10})$