

# Exercise



A certain unnamed physics professor was arrested for running a stoplight. He said the light was green. A pedestrian said it was red. The professor then said: “We are both being truthful; you just need to account for the Doppler effect !”

Is it possible that the professor’s argument is correct?

$$(\lambda_{green} = 500 \text{ nm}, \lambda_{red} = 600 \text{ nm})$$

**A) YES**

**B) NO**

As professor approaches stoplight, the frequency of its emitted light will be shifted **UP**

The speed of light does not change

Therefore, the wavelength ( $c/f$ ) would be shifted **DOWN**

If he goes fast enough, he could observe a green light !