

Name _____
Lab Partner(s): _____
Date Performed: _____
Date Due: March 7, 2017
Physics 111 Laboratory
Experiment #6
Photoelectric Effect

Attach your fully labeled and captioned data tables for each part along with any fully labeled and captioned graphical representations of your data that you may have created to the end of this handout.

Honor Code Statement:

1. What assumptions do you need to make to perform this experiment?
2. From your plot of V_{stop} vs. f for the different colors you measured, are your data consistent with Einstein's model for the photoelectric effect? Explain.
3. From your plot of V_{stop} vs. f , what does the slope of the line tell you? What is your experimental value of Planck's constant h ? How does it compare to the actual value. Calculate the % difference.

4. From your plot of V_{stop} vs. f , what does the intercept of the line represent?
5. From your plot of V_{stop} vs. f , what is the minimum frequency that will produce photoelectrons?
6. Calculate K_{max} for each of the wavelengths/frequencies of light. At what speed would an electron (mass = 9.109×10^{-31} kg) need to be moving to have that kinetic energy?
7. From your plot of the stopping potential versus intensity of light transmitted for each color of light, what does your plot show? Based on the plot, do your results support the fact that light behaves as a wave or a particle. Be sure to fully explain your answer and show how your plot supports your choice.