

PHYS2627/PHYS2265 Introductory quantum physics

2265-2LABORATORYREPORT

Experiment 2: Balmer Series of Atomic Hydrogen Spectrum

Student Name: _____ Student No.: _____

Group No.: _____ Date: _____

Title: Balmer Series of Hydrogen

1. Determine the wavelength and frequency of each spectral line. Report your results in the following table:

Grating constant, $d =$ _____

First order ($k = 1$)	Diffraction angle ($^{\circ}$)	Wavelength (nm)	Frequency ($\times 10^{14}$ Hz)
Violet			
Green			
Red			

Second order ($k = 2$)	Diffraction angle ($^{\circ}$)	Wavelength (nm)	Frequency ($\times 10^{14}$ Hz)
Violet			
Green			
Red			

2. Using the calculated wavelengths and frequencies, predict the diffraction angles of the third order spectral lines for violet and green. Can you observe these lines?

Third order ($k = 3$)	Predicted diffraction angle ($^{\circ}$)
Violet	
Green	

3. Calculate R_H , the Rydberg constant of hydrogen.
