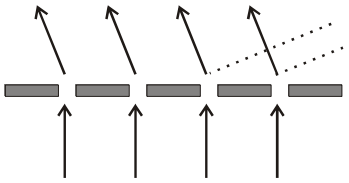
Exercise 9	**Energy levels of hydrogen atoms. Rydberg constant.**		*Theory:*
Team:	Name:		*Experiment:*
Date:	Weeks day and hour:	Major, group:	*Remarks*

Diffraction grating

Principle of operation of the diffraction grating (complete the picture by introducing grating constant, wavelength, angle of deflection)



Diffraction grating equation:.....

Energy levels of hydrogen atoms

Draw first three transitions of Balmer series:

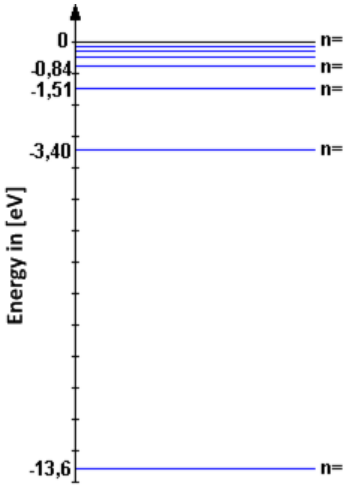


Table 2. Wavelength and quantum numbers

Wavelength (nm)	1/wavelength (nm^{-1})	n	$1/n^2$

Rydberg constant and ionization energy

Rydberg equation:.....

Fitting parameters of the dependence of i 1/wavelength vs. $1/n^2$

.....

Rydberg constant = ... ±..... [.....]

Relation of the ionization energy of the ground state of hydrogen from the Rydberg constant:

.....

Ionization energy = ... ±.....[J] = ... ±..... [eV]

Conclusions (Are the results of experiments agree with the table values?)

Rydberg constant = 109737,312±0,011 cm^{-1}

Theoretical first ionization energy of the hydrogen atom = 1 [Ry] = 13.6 [eV] = ... [J]

Electron charge e =1.602 10^{-19} C