

Sample Data Set – Atomic Spectra

PART 1

Table 1: Spectral lines of Na

Color of the line observed	Order number (n=1)	Angular Position of Left Image θ_L	Angular Position of Right Image θ_R	Average Angular Position of Image θ	$\sin\theta$	Experimental Wavelength λ (Å)	Theoretical Wavelength λ_t (Å)	Percentage Error (%)	Maximum Rel. Error in Wavelength $\Delta\lambda$ (Å)
Violet	1	163° 22 '	196° 36 '						
Green-blue	1	161° 37 '	198° 21 '						
Green	1	159° 41 '	200° 17 '						
Yellow	1	158° 56 '	201° 2 '						
Red	1	157° 58 '	202° 00 '						

PART 2

Table 2 : Fine structure of some spectral lines of Na

Color observed	Order number (n)	Angle of the left doublet θ_{d1}	Angle of the right doublet θ_{d2}	$\sin\theta_{d1}$	$\sin\theta_{d2}$	λ_1 (Å)	λ_2 (Å)	$\Delta\lambda = \lambda_1 - \lambda_2$ (Å)	Theoretical $\Delta\lambda$ (Å)	Percentage error of $\Delta\lambda$ (%)
Red	2	13° 50 '	13° 52 ' 49"							
Red	3	37° 29 '	37° 34 ' 8"							
Yellow	2	11° 58 ' 24"	12° 00 ' 59"							
Yellow	3	34° 6 ' 48"	34° 11 ' 21"							
Green	2	6° 49 ' 60"	6° 52 ' 21"							
Green	3	25° 21 ' 12"	25° 25 ' 2"							