

Optical Spectroscopy

16.9.05

Experiment Data

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Start: 15:50

End:

Measurements on Assignment 2:

Spectra of mercury lamp in 1st Order:

λ_{nm}	angle	size (intens.)
404,7	194,75	med
407,8	194,86	med
433,8	195,79	used small
434,8	195,80	small
435,8	195,84	big
491,6	197,81	med
496,0	197,98	med
502,6	198,23	small
504,6	198,30	small
512,1	198,59	small
531,7	199,25	s
535,4	199,39	s
536,5	199,41	s
546,1	199,77	b
567,6 578,6	200,54	s
577,0	200,88	b
579,1	200,97	b

approx. reading error:

angle: $0,02^\circ - 0,01^\circ$

center: $181,85^\circ$
(direct)

center as difference (491,6 nm)

right ~~sub~~ λ_{nm} :

right: $197,82^\circ$

left: $163,90^\circ$

\Rightarrow center: $180,86^\circ \pm 0,02^\circ$

λ / nm	angle	intensity
580,4	201,03	s
585,9	201, 21 21	s
587,9	201,33	s
589,0	201,99	s
607,3	202,19	s
612,3		
612,3		
623,4	202,59	m
671,6	—	

~~Crosscheck to the other side~~

λ	angle
404,7	167,97
407,8	167,83
546,1	

second order measurement:

λ/nm	angle
579	—
577	—
546	221,34
492	214,34 216,54
436	212,00

Measurements on Assignment 3

center calibration: error: $0,02^\circ$

left: $200,39^\circ$

right: $159,55^\circ$

\Rightarrow center: $179,97^\circ \pm 0,02^\circ$

intens. & line color	angle	1st order
small violet	195,00	
big violet	195,34	
med. green/blue	196,24	
(small green	196,74)	
big dark-green	196,99	
big green	197,30	
big yellow	200,39	
big red	203,35	
small red	202,87	
small blue	214,99	
small red	204,75	

Measurements on Assignment 4

center calibration: error: $0,02^\circ$

right: $201,57^\circ$

left: $161,73^\circ$

\rightarrow center: $181,65^\circ \pm 0,02^\circ$

measurement for closed slit: $6,71 \text{ mm}$

guessed error: $0,02 \text{ mm}$

1. order measurement: limit at $6,21 \text{ mm}$ slit position

average value: $200,77^\circ$

left edge: $200,64^\circ$

right edge: $200,83^\circ$

2. order measurement: failed

Measurements on Assignment 5

- only one refraction order
- colors are reverse
- spectral lines are thinner and closer together

16.09.05 R.E.