faraday and Kerr Effect

J. Faraday Effect

a. Relationship between magnetic flux density and current

Current [A]	Magnetic flux density in steps of 5mm (mT)		140 - Inear fit
		o 35	120 -
0.55	4.35 19-30 35.2 36.6 35.7 23.9 5.	.73 0.84	<u>E</u> 100 -
1.03	8.38 33.1 65.3 68.3 66.8 45.0 11	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Den Signature Contract of the
1.52	10.7 57.9 96.2 100.4 98.1 64.6 15	-4 2.62 = 1 = 1.52 A - 1 = 2.00 A	¥ 80 -
2.00	13.0 71.4 126.4 132.0 129.2 89.7 21.8	2-87 — I = 2.57 A — I = 3.02 A	ignetij
2.57	14.65 85-1 160-3 167.2 164.4 112.7 27.8	3 4.18 — I = 3.50 A — I = 4.03 A	w 60 -
3.02	20.0 91.0 183.6 192.5 188.8 133.0 35.6		ξ
3.50	22.6 110.5 200.0 212.8 209.3 142.0 38.1		40 -
4.03	23.8 113.1 216.2 225.6 219.6 149.6 37.2	5.46	
			0.5 1.0 1.5 2.0 2.5 3.0 3.5
		50 -	Coil Current, I [A]
			Variation of magnetic field with current
		0 -	Line of fit:
2 (nm) Current	(CA Position 1 Position 2 2.00 Slope (Bus 0) Verdet consto		
2.06	39 54 15	Distance from one edge of pole [mm]	B = (38.37 I + 1.06) mT
1.72	40 53 13		
440 1.26	42 54 12 0.095 3176.05		
1.02	43 50 7		
0.69	46 50 4		
0.26	45 48 3	— 525	3250 — linear fit
0.27	49	525	
505 L.27	47 49 2 45 50 5 0.00d 2042.42	7 -	3000 -
1.21			
1.74	44 52 8	6-	2750 -
2.33	42 52 10		2500
2.08	45 51 6		± 2500 -
1.73	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 -	ts one
1.46	46 50 4 0.039 1317.52		පු 2250 - ස
595 1.06	45 50 5	4 -	e 2000
0.55	48 49 1		× 2000 -
0.54	41 78 1		1750
[-09	46 50 4 46 50 4		1750 -
580 <u>1.54</u>	'		1500 -
2.05	Lui Co O	2 -	
2.58 3.01	43 54 11		1250 -
3.50	42 54 12	1-	
2.98	41 54 13	20 40 60 100 100 110	440 460 480 500 520 540 560 580 60 wavelength
3.50	40 55 15	20 40 60 80 100 120 140	
	42 53 11	n rmt7>	March of March and at with a allowable
2.52 525 2.60	43 53 10 0.056	$B(mT) \longrightarrow$ Variation of D0 with D for $\lambda = 525$ nm	Variation of Verdet constant with wavelength
1.54	45 50 5	Variation of be with to for h=325 nm	
1.01	45 50 5		
0.50	47 49 2		
0.30	` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '		

I Kerr Effect:

Amplification set to 100.

Io = 13.87 V

Voltage (v)	Intensity (I)	
105	J	
430	0.02	1.0 -
500	0.43	- 8.0 Bisit
557	1.04	ised interest in the last of t
626	3.16	Noma Amazonia
680	5.43	0.4 -
747	9.69	o.2 -
8 6 D	13.87	200 400 600 800 1000 1200
853	13.87	200 400 600 800 1000 1200 Voltage [V]
904	13.87	
1000	13.05	— linear fit
1062	6.50	300 - To 250 -
1106	3.50	Dhase Displacement [degrees] 100 - 150 - 1
1151	1.85	150 -
		100 -
		se 50 -
		0.0 0.2 0.4 0.6 0.8 1.0 1.2 Voltage squared 1e6
		slope = $\frac{\Delta}{U^2}$ = $\frac{2.5 \times 10^{-4}}{}$
		> K = Slupe. d2.2
		TL

: X = 5.36 × 10⁻⁸ ° m/~2