

UM-SJTU PHYSICS LABORATORY VP241
DATA SHEET (EXERCISE 2)

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Date: 2019.11.29

NOTICE. Please remember to show the data sheet to your instructor before leaving the laboratory. The data sheet will not be accepted if the data are recorded with a pencil or modified with a correction fluid/tape. If a mistake is made in recording a datum item, cancel the wrong value by drawing a fine line through it, record the correct value legibly, and ask your instructor to confirm the correction. Please remember to take a record of the precision of the instruments used. You are required to hand in the original data with your lab report, so please keep the data sheet properly.

U_S [V] $\pm 0.5\%$ [V]	$U_0(I_M = 0)$ [V] $\pm 0.05\%$ [V]	$U(I_M = 250 \text{ mA})$ [V] $\pm 0.05\%$ [V]
5.00	2.513	2.634

Table 1. Data for U_0 and U with $U_S = 5 \text{ V}$.

	U_S [V] $\pm 0.5\%$ [V]	U_0 [V] $\pm 0.05\%$ [V]	U [V] $\pm 0.05\%$ [V]
1	2.80	1.3970	1.4677
2	3.20	1.5983	1.6796
3	3.60	1.8050	1.8964
4	4.00	2.0053	2.1061
5	4.40	2.2103	2.317
6	4.80	2.410	2.525
7	5.20	2.614	2.738
8	5.60	2.815	2.942
9	6.00	3.013	3.148
10	6.40	3.213	3.350
11	6.80	3.406	3.546
12	7.20	3.601	3.745
13	7.60	3.791	3.936
14	8.00	3.980	4.127
15	8.40	4.167	4.312
16	8.80	4.355	4.501
17	9.20	4.532	4.784
18	10.00	4.915	5.066

Table 2. Data for U_0 and U with different U_S .

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$\pm 0.5\% + 6 \times 10^{-3} / 6 \times 10^{-4}$

	$I_M [\text{mA}] \pm 2\% [\text{mA}]$	$U [\text{mV}] \pm 0.5\% [\text{V}]$
1	0.	0.0000 0.00
2	50	0.0297 27.35
3	100	0.0496 49.86
4	150	0.0728 73.21
5	200	0.0969 98.44
6	250	0.1195 119.66
7	300	0.1418 143.82
8	350	0.1628 165.28
9	400	186.52
10	450	209.82
11	500	233.4

Table 3. Measurement data for the I_M vs. U relation.

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$$U = \frac{q}{2} + \frac{6 \times 10^3}{6 \times 10^{-4}}$$

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	x [cm] ± 0.5 [cm]	U [mV] ± 0.5 [V]		x [cm] ± 0.5 [cm]	U [mV] ± 0.5 [V]
1	2.50 0.00	10.91	27	17.00	119.62
2	0.50	14.04	28	18.00	119.59
3	1.00	19.27	29	19.00	119.31
4	1.50	26.75	30	20.00	119.29
5	2.00	38.60	31	21.00	119.05
6	2.50	53.68	32	22.00	118.36
7	3.00	70.97	33	23.00	117.63
8	3.50	85.49	34	24.00	116.15
9	4.00	96.32	35	25.00	114.10
10	4.50	103.43	36	25.50	112.51
11	5.00	107.81	37	26.00	110.44
12	0.25 0.25	12.33	38	26.50	106.80
13	0.75	16.49	39	27.00	101.31
14	1.25	22.74	40	27.50	93.87
15	1.75	30.81	41	27.75	88.43
16	6.00	113.23	42	28.00	80 81.80
17	7.00	115.77	43	28.25	72.80
18	8.00	117.29	44	28.50	66.13
19	9.00	118.12	45	28.75	56.73
20	10.00	118.80	46	29.00	47.58
21	11.00	119.18	47	29.25	40.91
22	12.00	119.31	48	29.50	34.29
23	13.00	119.43	49	29.75	29.03
24	14.00	119.30	50	30.00	24.11
25	15.00	119.50	51	2.25	46.49
26	16.00	119.71	52	2.75	62.37

Table 4. Data for the U vs. x relation.

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