

UM-SJTU PHYSICS LABORATORY Vp241  
DATA SHEET (EXERCISE 2)

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**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] $\pm$ _____ [V]	$U(I_M = 250 \text{ mA})$ [V] $\pm$ _____ [V]
5.00	2.482	<del>2.496</del> <del>2.602</del> 2.602

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

	$U_S$ [V] $\pm$ $0.5\%$ [V]	$U_0$ [V] $\pm$ _____ [V]	$U$ [V] $\pm$ _____ [V]
1	2.80	1.4019	<del>1.4715</del> 1.4694
2	3.20	1.5977	1.6767
3	3.60	1.7970	1.8848
4	4.00	1.9922	<del>2.0911</del> 2.0893
5	4.40	2.186	2.292
6	4.80	2.382	2.495
7	5.20	<del>2.573</del> 2.577	2.700
8	<del>6.00</del> 5.60	2.772	2.905
9	<del>6.40</del> 6.00	2.966	3.107
10	<del>6.80</del> 6.40	3.160	3.306
11	<del>7.20</del> 6.80	3.351	3.504
12	<del>7.60</del> 7.20	3.541	3.700
13	<del>8.00</del> 7.60	<del>3.701</del> 3.735	3.901
14	<del>8.40</del> 8.00	3.929	4.097
15	<del>8.80</del> 8.40	4.120	4.292
16	<del>9.20</del> 8.80	4.309	4.480
17	<del>9.60</del> 9.40	4.593	4.767
18	10.00	4.880	5.061

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

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$0.05\% + 6 \times 10^{-3} \text{ or } 6 \times 10^{-4}$

	$I_M [\text{mA}] \pm 2\% [\text{mA}]$	$U [\text{V}] \pm \text{---} [\text{V}]$
1	0	0.0000
2	50	<del>0.0156</del> <del>0.0132</del> 0.0256
3	100	<del>0.0278</del> 0.0510
4	150	<del>0.0392</del> 0.0731
5	200	<del>0.0507</del> 0.0974
6	250	<del>0.0625</del> 0.1205
7	300	<del>0.0734</del> 0.1419
8	350	0.0858 0.1664
9	400	<del>0.0948</del> 0.1856
10	450	<del>0.1077</del> 0.2102
11	500	<del>0.1185</del> 0.2324

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

Instructor's signature: \_\_\_\_\_



$0.05\% + 6 \times 10^3 \text{ or } 6 \times 10^{-4}$   $0.05\% + 6 \times 10^3 \text{ or } 6 \times 10^{-4}$

	$x \text{ [cm]} \pm 0.05 \text{ [cm]}$	$U \text{ [mV]} \pm \text{ [mV]}$		$x \text{ [cm]} \pm 0.05 \text{ [cm]}$	$U \text{ [mV]} \pm \text{ [mV]}$
1	0.0	9.65	27	18.0	120.14
2	0.2	11.86	28	19.0	120.03
3	0.4	13.58	29	20.0	119.98
4	0.6	15.03	30	21.0	119.95
5	0.8	17.36	31	22.0	119.54
6	1.0	19.40	32	23.0	118.74
7	1.2	22.71	33	24.0	117.03
8	1.4	24.82	34	25.0	115.79
9	1.6	28.58	35	26.0	112.30
10	1.8	33.53	36	<del>27.0</del> 26.2	111.20
11	2.0	38.34	37	<del>28.0</del> 26.4	109.69
12	3.0	70.73	38	<del>29.0</del> 26.6	106.43
13	4.0	96.47	39	<del>30.0</del> 26.8	106.36
14	5.0	109.78	40	<del>31.0</del> 27.0 27.2	101.26
15	<del>6.7</del> 6.0	114.87	41	27.6	94.53
16	7.0	117.58	42	28.0	85.42
17	8.0	118.11	43	28.2	78.13
18	9.0	118.50	44	28.4	73.61
19	10.0	120.17	45	28.6	65.56
20	11.0	120.49	46	28.8	59.07
21	12.0	120.42	47	29.0	51.49
22	13.0	<del>119.43</del> 120.57	48	29.2	46.29
23	14.0	120.32	49	29.4	38.42
24	15.0	120.45	50	29.6	34.52
25	16.0	120.49	51	29.8	29.83
26	17.0	120.42	52	30.0	25.19

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

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