1041 电阻的测量 数据处理报告模板

实验一：伏安法测电阻

原始数据记录：

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| y=U/V | 0.80000 | 0.85000 | 0.90000 | 0.95000 | 1.00000 | 1.05000 | 1.10000 | 1.15000 |
| x=I/A | 0.00735 | 0.00800 | 0.00845 | 0.00905 | 0.00950 | 0.00992 | 0.01042 | 0.01090 |
| y^2=u^2/v^2 | 0.64000 | 0.72250 | 0.81000 | 0.90250 | 1.00000 | 1.10250 | 1.21000 | 1.32250 |
| x^2=I^2/A^2 | 0.00005 | 0.00006 | 0.00007 | 0.00008 | 0.00009 | 0.00010 | 0.00011 | 0.00012 |
| xy=IU/AV | .00588 | .0068 | .007605 | .0085975 | .0095 | .010416 | .011462 | .012535 |

数据处理：线性回归：

=0.9750

=0.0092

= 100.1745

a= 0.0535

=0.9986

R2=Rg

=100.1745 Ω

Rx不确定度计算：

2.1617

u(U)==0.00433 V

u(I)==4.33\*1e-5 A

ub(Rx)/Rx = =0.0065

ub(Rx) = 0.6483

u(Rx)==2.2568

Rx=100±2 Ω

实验二 半偏法测检流计内阻和电流常数ki

**原始数据记录：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| R1/Ω | U/V | R0/Ω | d/div | R2/Ω |
| **9** | **8.66025403784439E-03** | **16279** | **.577350269189626** | **10000** |

Rg=R2 = 10000

不确定度计算：

=10.02

Rgu(Rg) = 10.02

=2.03339882121807E-09

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Rs/Ω | V/V | d/dw | Rg/Ω | ki |
| 560 | 1.91 | 50 | 10000 | .00000000203 |

Rxh=(Rs)/((Rs+Rg)ki)\*(v/d)= 997910.136±4.916Ω

U(Rs)=(Δ仪（Rs）/sqrt(3)) = 5.77350269189626E-03

U(Rg) = 1

U(Rg+Rs)= sqrt(U(Rg)^2 + U(Rs)^2) = 1.00001666652778

U(V)= (Δ仪（Rs）/sqrt(3)) =(Δ仪（Rs）/sqrt(3)) = 5.77350269189626E-03

U(d) = 1

U(ki) = 1

U(Rxh)/Rxh = 492610837.438424

U(Rxh) = 491581347705010 Ω

Rxh = 997910.136±4.916

使用说明：将实验报告中与数据本身无关的公式以及数据表格提前打好，将需要填充数据的地方以“#key#”的方式预留好。然后调用程序处理数据即可得到一份完整的实验报告。