1.用三线摆测量转动惯量

查表记录：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 摆盘编号 | 摆盘质量*m0*  g | 摆盘半径*R*  mm | 上圆盘半径*r*  mm | 三孔所在圆环半径*R*1  mm |
| 12 | 77.59 | 34.20 | 14.64 | 21.94 |
| 不确定度 |  |  |  |  |
| 相对不确定度 |  |  |  |  |

(1)三线摆摆盘转动惯量

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 距离*H*（mm） | 416.81 |  |  |  |  |  |  |  | 416.81 |
| 计时周期数*n* | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| 摆动计时*t*0（s） | 41.853 | 42.404 | 42.473 | 42.264 | 42.833 | 42.299 | 42.747 | 42.087 | 42.370 |

(2)小钢球对其质心轴的转动惯量

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 千分尺零位读数mm | -0.028 |  |  |  |  |  |  |  | -0.028 |
| 小钢球直径*D*1（mm） | 20.000 | 20.030 | 20.010 | 20.020 | 20.010 | 20.005 |  |  | 20.013 |
| 小钢球质量*m*（g） | 32.80 | 32.78 | 32.78 | 32.80 | 32.80 | 32.78 |  |  | 32.79 |
| 距离*H*1（mm） | 417.07 |  |  |  |  |  |  |  | 417.07 |
| 计时周期数*n* | 30 | 30 | 30 | 30 | 30 | 30 |  |  | 30 |
| 摆动计时*t*1（s） | 36.758 | 37.496 | 37.865 | 36.504 | 37.819 | 37.759 |  |  | 37.367 |

2.验证平行轴定理

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 距离*H*2（mm） | 417.31 |  |  |  |  |  |  |  | 417.31 |
| 计时周期数*n* | 30 | 30 | 30 | 30 | 30 | 30 |  |  | 30 |
| 摆动计时*t*2（s） | 42.029 | 41.135 | 42.290 | 41.165 | 42.045 | 41.777 |  |  | 41.740 |

3.用扭摆测定转动惯量及金属丝的切变模量

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 圆环质量*m*（g） | 99.63 | 99.65 | 99.64 | 99.65 | 99.65 | 99.64 |  |  | 99.64 |
| 圆环内径*D*1（mm） | 72.06 | 72.00 | 72.16 | 72.00 | 72.06 | 72.16 |  |  | 72.07 |
| 圆环外径*D*1（mm） | 84.02 | 84.08 | 84.00 | 84.00 | 84.08 | 84.02 |  |  | 84.03 |

(1)大圆环转动惯量

(2)扭摆转动惯量和金属丝的切变模量

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 千分尺零位读数（mm） | -0.028 | -0.028 | -0.028 | -0.028 | -0.028 | -0.028 |  |  | -0.028 |
| 钢丝直径*D*（mm） | 0.512 | 0.512 | 0.512 | 0.512 | 0.512 | 0.512 |  |  | 0.512 |
| 悬丝长度*L*（mm） | 302.34 |  |  |  |  |  |  |  | 302.34 |
| 三爪盘计时周期数*n* | 20 | 20 | 20 |  |  |  |  |  | 20 |
| 三爪盘摆动计时*t*0（s） | 19.087 | 19.886 | 19.882 |  |  |  |  |  | 19.618 |
| 复合体计时周期数*n* | 20 | 20 | 20 |  |  |  |  |  | 20 |
| 复合体摆动计时*t*（s） | 41.032 | 41.064 | 41.009 |  |  |  |  |  | 41.035 |

(3)小圆环转动惯量

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 测量次序 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 平均 |
| 圆环质量*m*（g） | 60.73 | 60.74 | 60.73 | 60.73 | 60.72 | 60.73 |  |  | 60.73 |
| 圆环内径*D*1（mm） | 64.00 | 64.06 | 64.06 | 64.06 | 64.06 | 64.06 |  |  | 64.05 |
| 圆环外径*D*1（mm） | 71.64 | 71.62 | 71.66 | 71.62 | 71.64 | 71.66 |  |  | 71.64 |
| 复合体计时周期数*n* | 20 | 20 | 20 |  |  |  |  |  | 20 |
| 复合体摆动计时*t*（s） | 31.379 | 31.361 | 31.367 |  |  |  |  |  | 31.369 |