【实验题目】**刚体转动惯量测量**

实验1: 圆环参数测量

用游标卡尺测量圆盘的外径D和内径d各5次，计算平均值，用电子天平测量圆环质量

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 测量 | 1 | 2 | 3 | 4 | 5 | 平均 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  | | | | |

实验2：利用转动定理测量刚体转动惯量

测量刚体在固定力矩下的转动曲线，拟合得到角加速度；测量不同力矩下的角加速度，利用线性拟合得到转动惯量。

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 空载 | | 负载 | |
|  |  |  |  |
| 5 |  |  |  |  |
| 10 |  |  |  |  |
| 15 |  |  |  |  |
| 20 |  |  |  |  |
| 25 |  |  |  |  |
| 30 |  |  |  |  |
| 35 |  |  |  |  |
| 拟合 |  | |  | |
| 结果 |  | | | |

实验3：扭丝扭力系数测量

记录拉力和转角，用拟合测量数据

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 测量 | 1 | 2 | 3 | 平均 |
|  |  |  |  |  |
|  |  |  |  |  |

扭力系数

扭丝材料剪切模量测量(选做)

用螺旋测微计测扭丝直径5次，取平均值。

螺旋测微计零点误差：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 测量 | 1 | 2 | 3 | 4 | 5 | 平均 |
|  |  |  |  |  |  |  |

用卷尺测量扭丝长度L =

剪切模量

实验4：利用扭摆测量刚体转动惯量

测量扭摆阻尼振动曲线，用衰减正弦拟合固有角频率，测5次取平均值，根据扭摆的固有角频率与转动惯量的关系计算转动惯量。

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | | | | |  |
|  | 1 | 2 | 3 | 4 | 5 | 平均 |
| 空载 |  |  |  |  |  |  |  |
| 负载 |  |  |  |  |  |  |  |
| 圆盘转动惯量 | | | | | | | |

**指导老师：**

**实验日期：**