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课程编号 1800410006

**深 圳 大 学 实 验 报 告**

**课程名称：­ 大学物理实验（2）**

**实验名称： 霍尔效应及其应用**

**学院： 土木工程学院**

**组号： 3 指导教师： 李甫**

**报告人： 康晓沛 学号： 2015090043**

**实验地点： 南区物理光电楼214**

**实验时间： 2016 年 12 月 5 日 星期 一**

**实验报告提交时间： 2016年12月12日**

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| 五、数据记录：  组号： 03  １、测量试样的*VH*—*IS* 和*VH*—*IＭ* 曲线，确定样品的霍尔系数  （1）保持励磁电流*IM*（*IM*=0.500A）不变,将实验仪双刀开关倒向“*VH* ”，测试仪功能选择置于“*VH* ”，测绘*VH*—*IS* 曲线．   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | *IS/*mA | *V*1*/*mV | *V*2*/*mV | *V*3*/*mV | *V*4*/*mV |  | | +*B*,+*Is* | -*B*,+*Is* | -*B*,-*Is* | +*B*,-*Is* | | 1.00 |  |  |  |  |  | | 1.50 |  |  |  |  |  | | 2.00 |  |  |  |  |  | | 2.50 |  |  |  |  |  | | 3.00 |  |  |  |  |  | | 3.50 |  |  |  |  |  | | 4.00 |  |  |  |  |  |   （2）、保持霍尔片工作电流*IS*的值不变（ *IS**=*3.00mA），测绘曲线*VH*—*IＭ*   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | *IM/*A | *V*1*/*mV | *V*2*/*mV | *V*3*/*mV | *V*4*/*mV |  | | +*B*,+*Is* | -*B*,+*Is* | -*B*,-*Is* | +*B*,-*Is* | | 0.300 |  |  |  |  |  | | 0.400 |  |  |  |  |  | | 0.500 |  |  |  |  |  | | 0.600 |  |  |  |  |  | | 0.700 |  |  |  |  |  | | 0.00 |  |  |  |  |  |   励磁线圈参数*K*= KGS.A-1  霍尔片厚度 *d*  = mm   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X1/cm | X2/cm | X/cm | *V*1*/*mV | *V*2*/*mV | *V*3*/*mV | *V*4*/*mV | *VH*/mV | *B*/KGS | | +*B*,+*Is* | -*B*,+*Is* | -*B*,-*Is* | +*B*,-*Is* | | 0.0 | 0.0 | 14 |  |  |  |  |  |  | | 0.5 | 0.0 | 13.5 |  |  |  |  |  |  | | 1.0 | 0.0 | 13 |  |  |  |  |  |  | | 1.5 | 0.0 | 12.5 |  |  |  |  |  |  | | 2.0 | 0.0 | 12 |  |  |  |  |  |  | | 5.0 | 0.0 | 9 |  |  |  |  |  |  | | 8.0 | 0.0 | 6 |  |  |  |  |  |  | | 11.0 | 0.0 | 3 |  |  |  |  |  |  | | 14.00 | 0.0 | 0 |  |  |  |  |  |  | | 14.00 | 3.0 | -3 |  |  |  |  |  |  | | 14.00 | 6.0 | -6 |  |  |  |  |  |  | | 14.00 | 9.0 | -9 |  |  |  |  |  |  | | 14.00 | 12.0 | -12 |  |  |  |  |  |  | | 14.00 | 12.5 | -12.5 |  |  |  |  |  |  | | 14.00 | 13.0 | -13 |  |  |  |  |  |  | | 14.00 | 13.5 | -13.5 |  |  |  |  |  |  | | 14.00 | 14.0 | -14 |  |  |  |  |  |  |   ２、测量螺线管轴线上磁场分布  霍尔片工作电流*IS*= mA , 励磁电流*IM*= A,  霍尔元件灵敏度*KH*= mv/mA.KGS |
| **六、数据处理：**  1、绘制试样的*VH-IS*曲线、*VH-IM*曲线。  2、绘制螺线管的中心轴线上的磁场分布曲线。  3、求出霍尔片的霍尔系数。 |
| **七、实验结论与讨论：** |
| **八：问答题**  1、如果磁感应强度B不垂直于霍尔片，对测量结果有何影响？如何由实验判断B与霍尔片  是否垂直？  2、霍尔效应有哪些应用？试举一例，并简单阐述其原理。 |
| 指导教师批阅意见： |
| 成绩评定：   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **预习**  （20分） | **操作及记录**  （40分） | 数据处理  20分 | 结果与讨论10分 | 思考题  10分 | **总分** | |  |  |  |  |  |  |   1、报告内的项目或内容设置，可根据实际情况加以调整和补充。 |