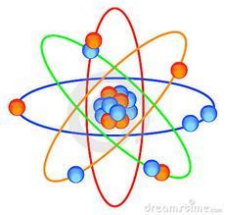
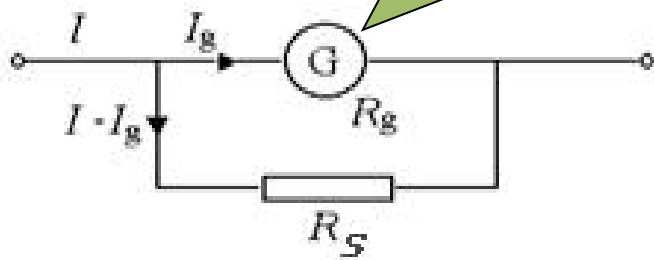
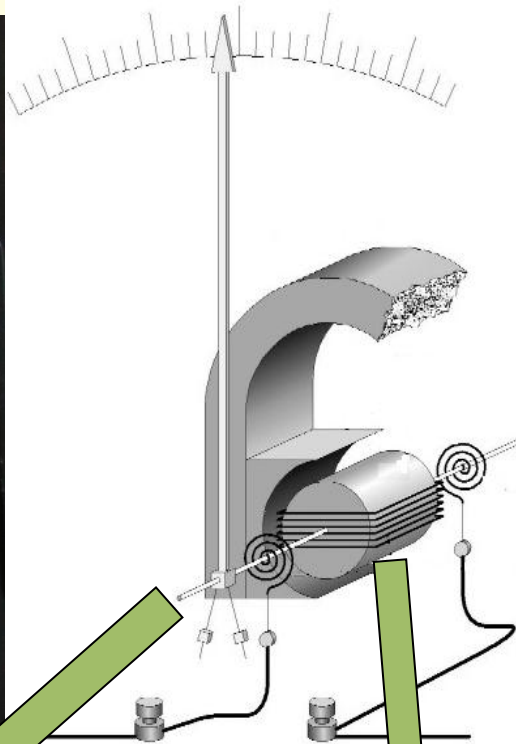


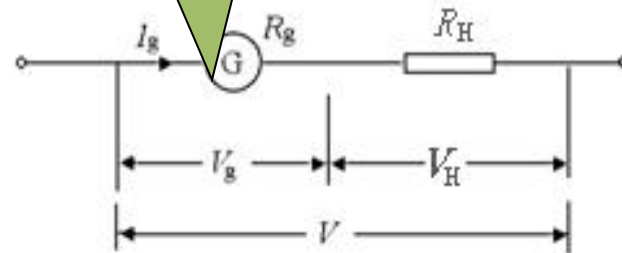
电表的改装和矫正



关于电表的工作原理和使用

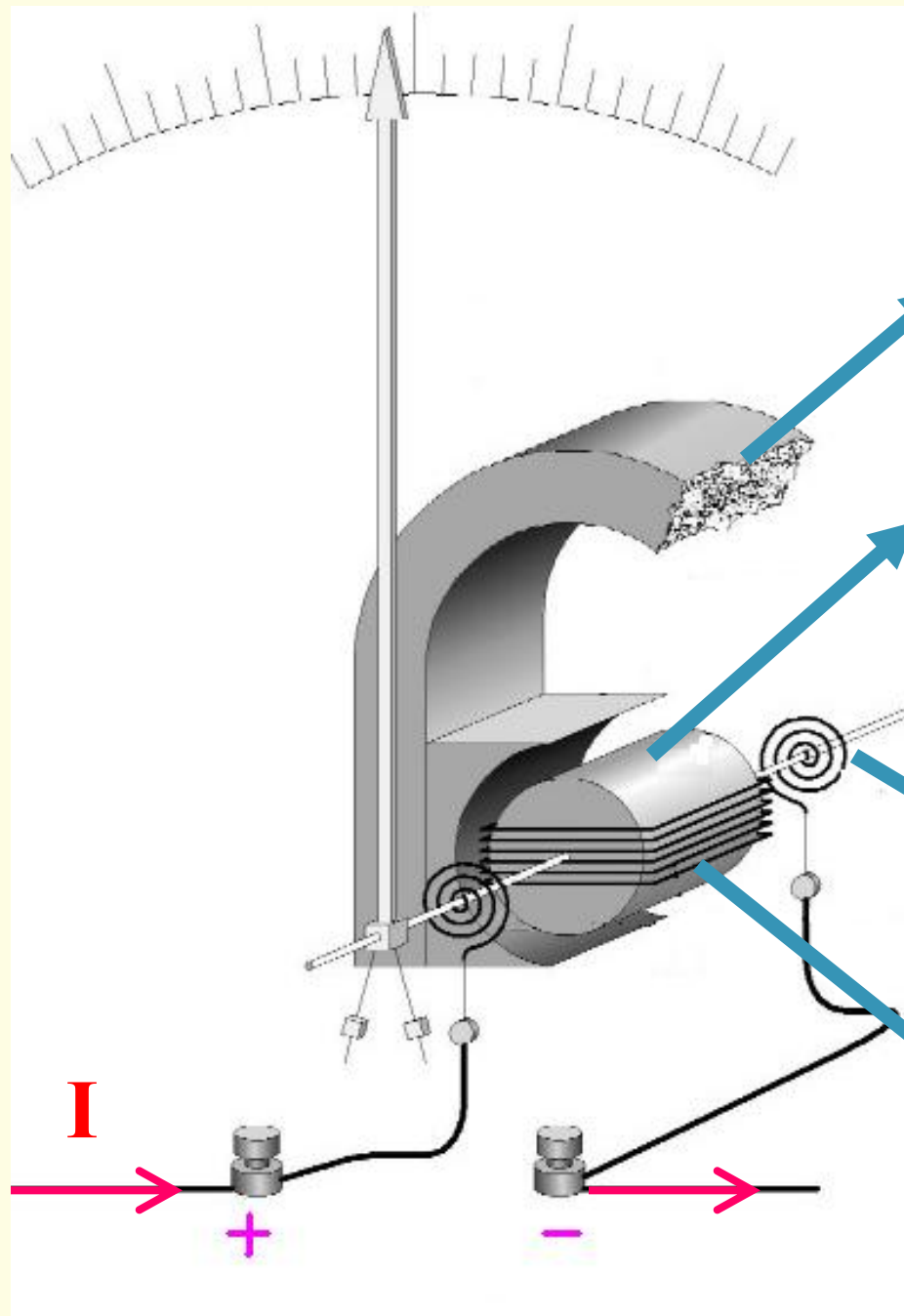


电流表改装



电压表改装



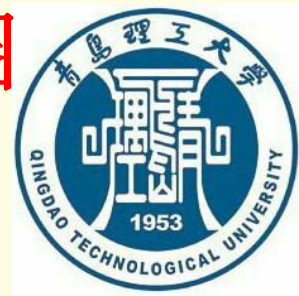


蹄形永久磁铁

圆柱铁芯

螺旋弹簧

细铜线圈

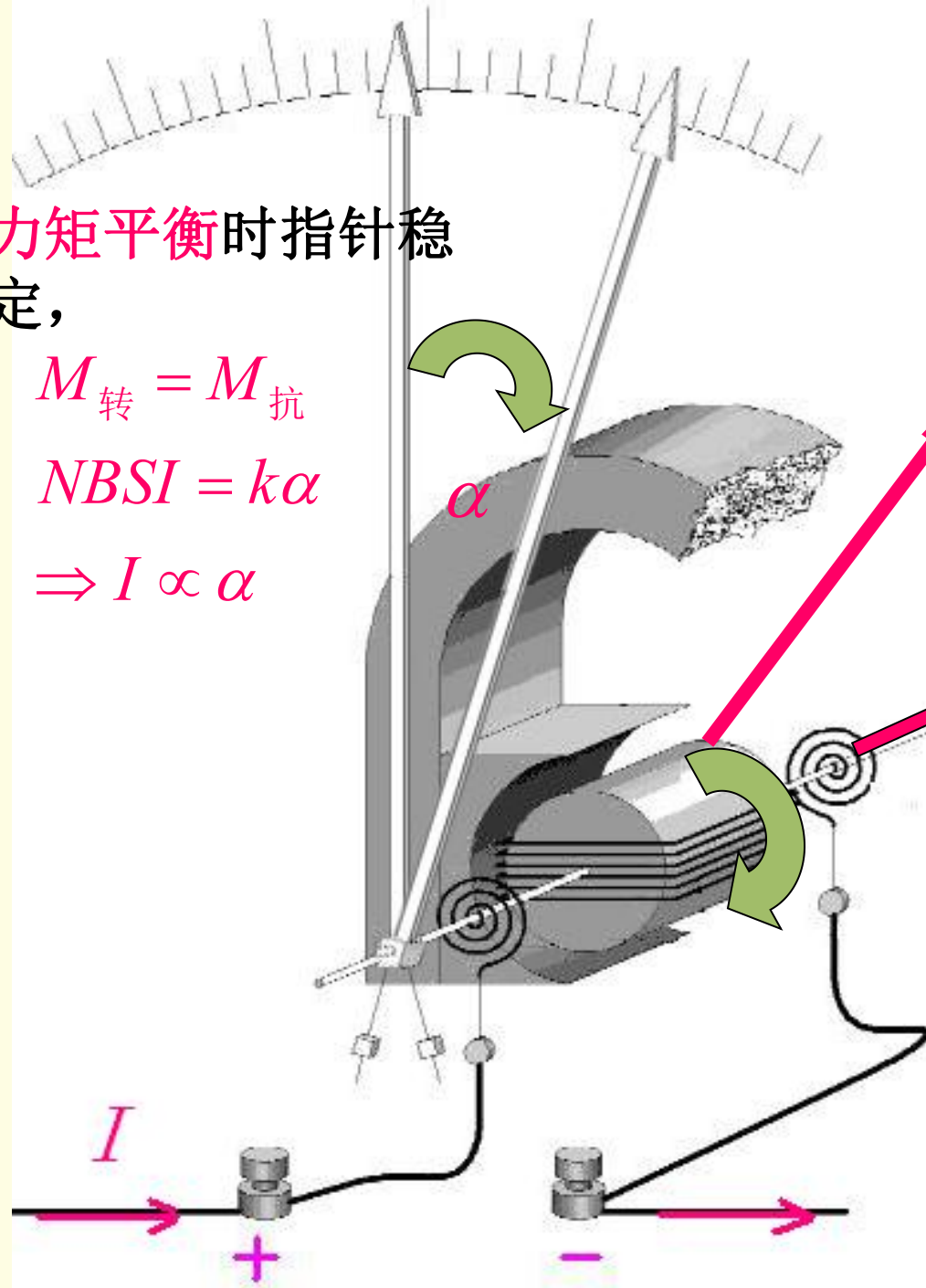


力矩平衡时指针稳定，

$$M_{\text{转}} = M_{\text{抗}}$$

$$NBSI = k\alpha$$

$$\Rightarrow I \propto \alpha$$



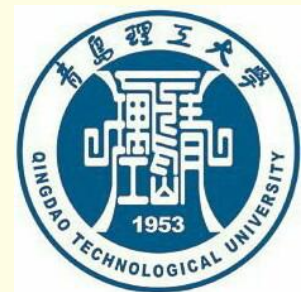
线圈所受到的
电磁力的转动

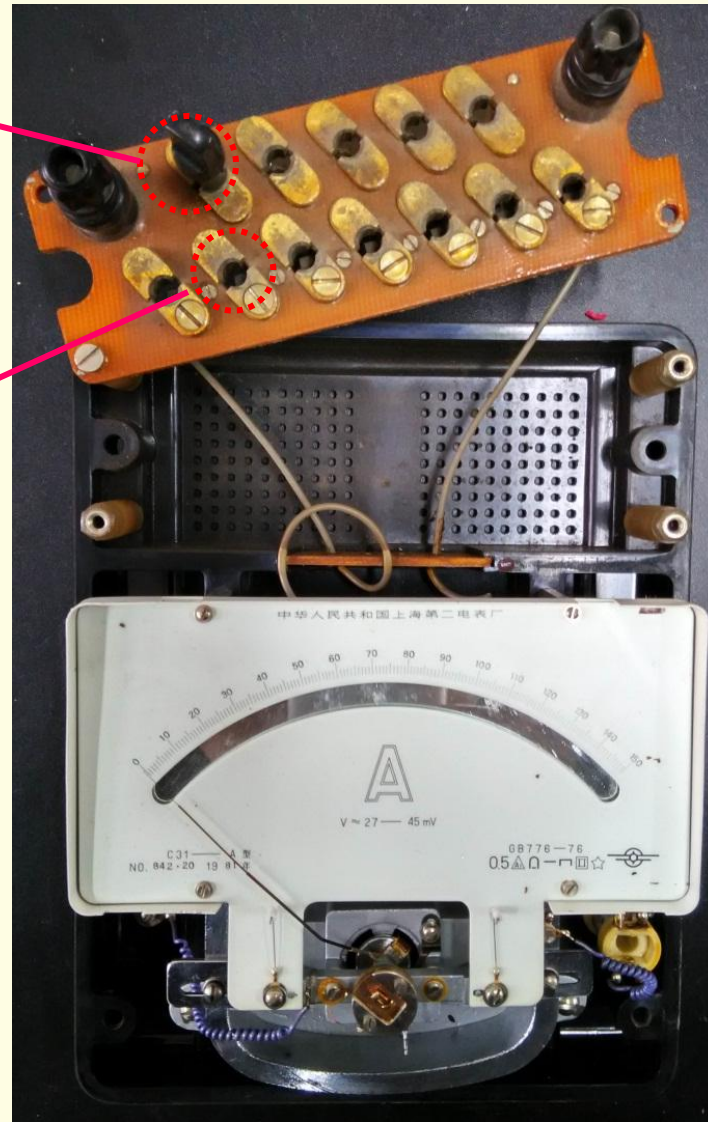
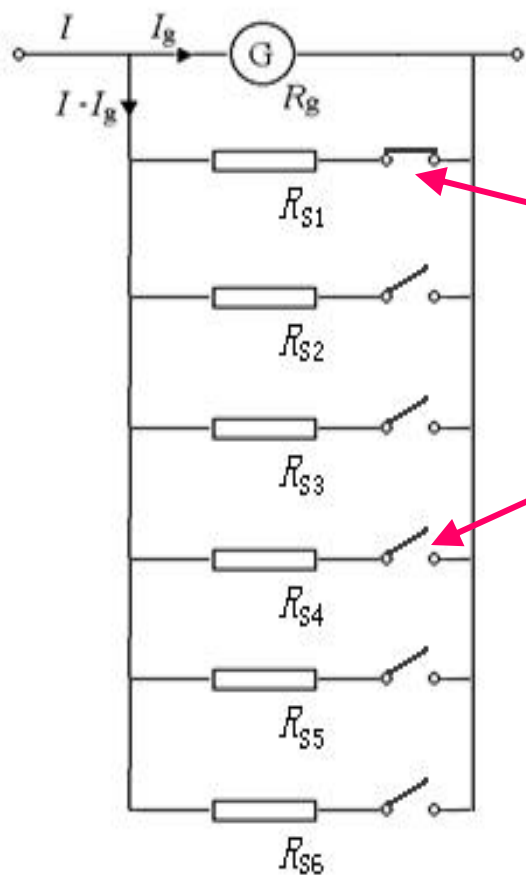
$$M_{\text{转}} = NBSI \propto I$$

螺旋弹簧旋转
形成的抗拒力

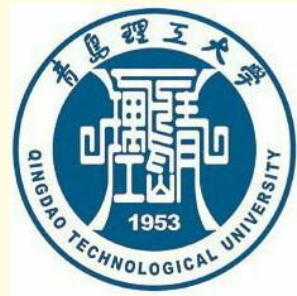
$$M_{\text{抗}} = k\alpha \propto \alpha$$

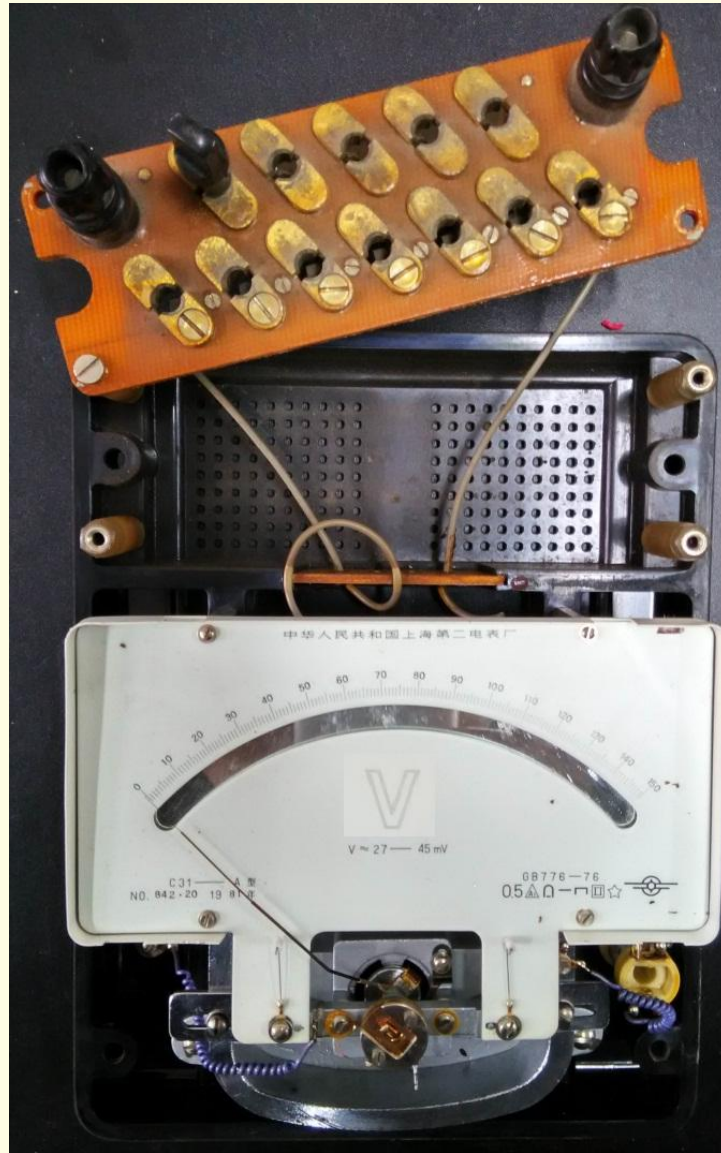
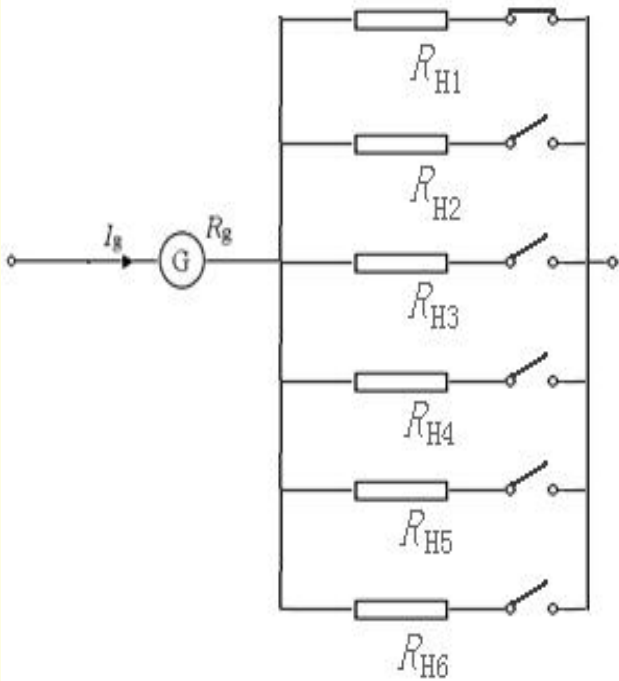
返回



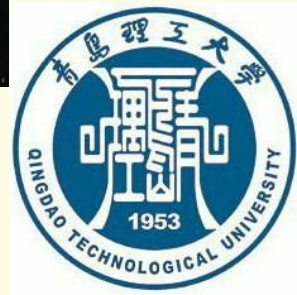


电流表多量程选择电路原理图

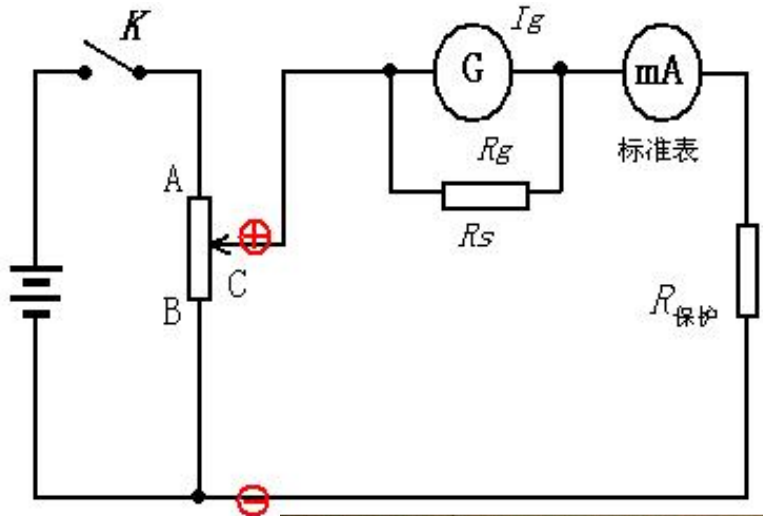




电压表多量程选择电路原理图



电流表改装电路



电压表改装电路

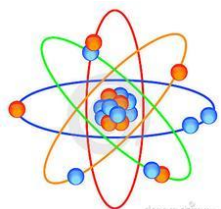
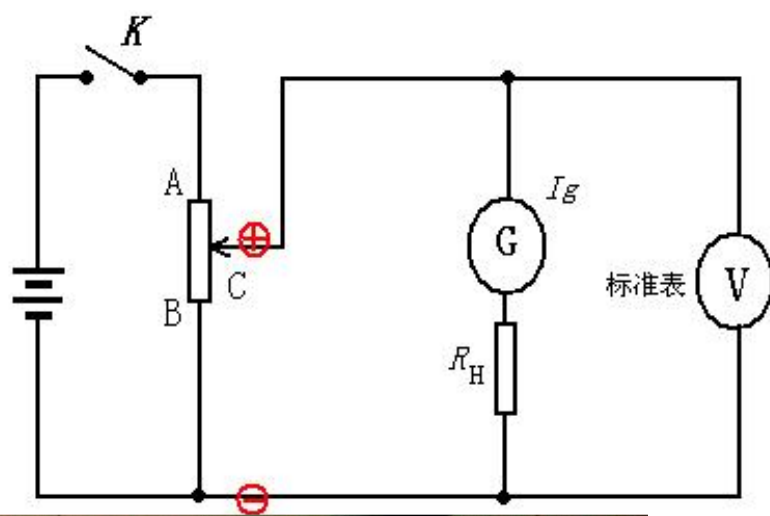


表1 改装表表头参数


满度电流 I_g		(1.00mA)
内阻 R_g		(150.0Ω) 

表2 电流表的改装与校正(满偏校正)

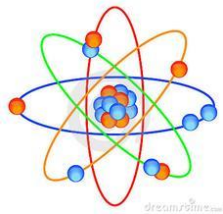
改装表量程 I_m	5mA	校正后配置电阻 R'_s	Ω
配置电阻 R_s		改装表等效电阻 R_l	Ω

表3 改装电流表校正数据

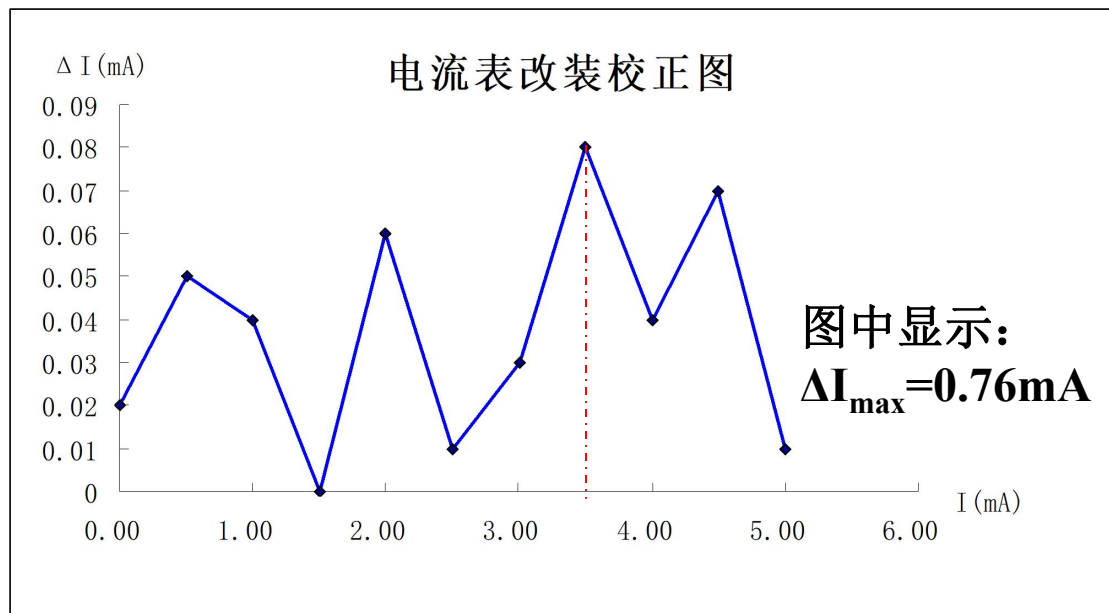
$I_{改} (mA)$	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
$I_{标} (mA)$	升										
	降										
	平均										
$\Delta I_{标} = I_{标} - I_{改} $											

实验报告上要求：在坐标纸上绘制 $I_{改} - \Delta I_{校}$ 校正曲线图！

根据精度等级定义确定改装电表精度等级： $K = \frac{|\Delta I_{max}|}{I_m} \times 100 = \underline{\hspace{2cm}} \Rightarrow \underline{\hspace{2cm}}$



本次实验作图和求解精度等级K求解举例示范!

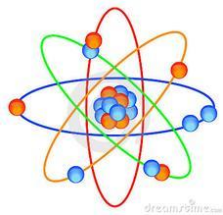


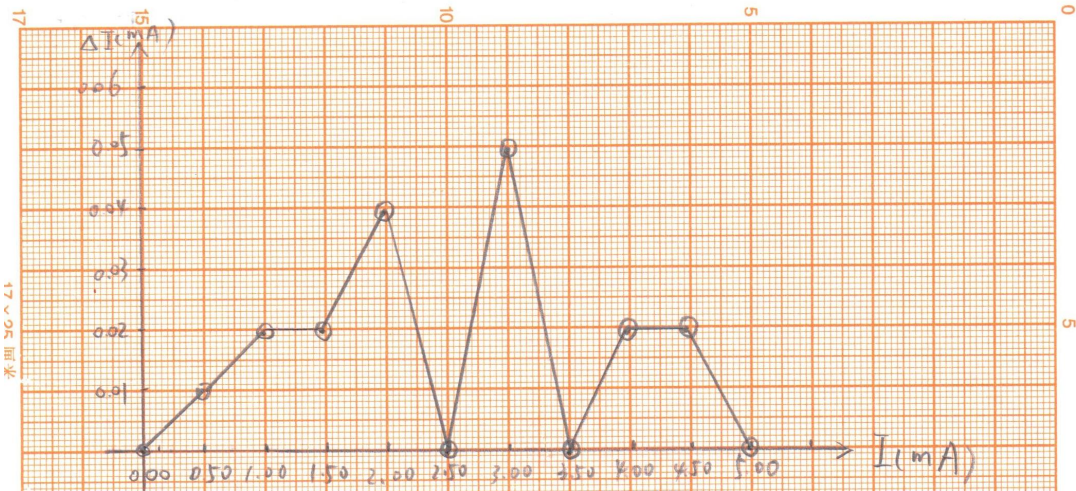
$$K = \frac{|\Delta I_{\max}|}{I_m} \times 100 = \frac{|0.76|}{5} \times 100 = 1.52 \Rightarrow 2.0$$

这次改装5mA电流表精度等级 $K = 2.0$

注：精度等级 K 在电气工程上的约定习惯只能取

0.1***0.2***0.5***1.0***1.5***2.0***5.0





电流表误差校正曲线图



电压表校正图

17 ~ 95 厘米

标准计算纸

上海浦东设计院监制

第三版

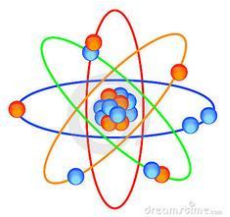



表 4 电压表的改装与校正(满偏校正) 

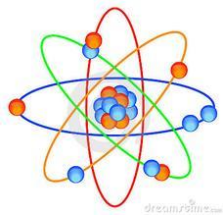
改装表量程 U_m	5V	校正后配置电阻 R'_s	Ω
配置电阻 R_H	48500 Ω	改装表等效电阻 R_l	Ω

表5 改装电压表校正数据

$U_{改}$ (V)		0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
$U_{标}$ (V)	升											
	降											
	平均											
$\Delta U_{标} = U_{标} - U_{改} $												

实验报告上要求：在坐标纸上绘制 $U_{改} - \Delta U_{校}$ 校正曲线图！

根据精度等级定义确定改装电表精度等级： $K = \frac{|\Delta U_{max}|}{U} \times 100 = \underline{\hspace{2cm}} \Rightarrow \underline{\hspace{2cm}}$



替代法测量被改电表满偏电流 I_g 和内阻 R_g

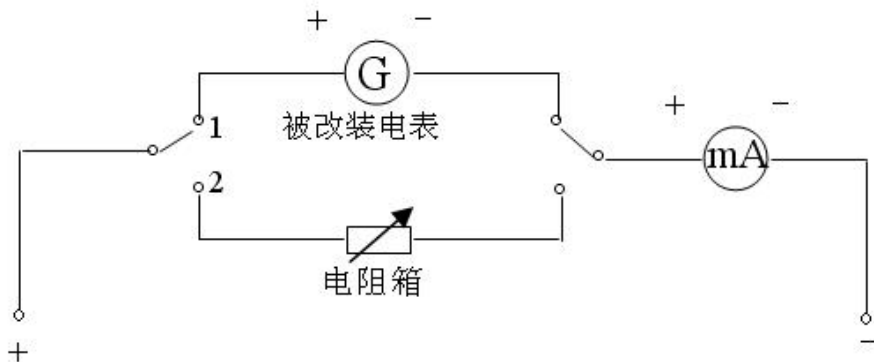


表1 改装表表头参数

满度电流 I_g	
内阻 R_g	

(1.00mA)

(150.0Ω)



返回

