# 弗兰克赫兹实验汞$6^3P_0$能级测量

苗子齐 08300190003
合作者 徐迪飞　指导老师 白翠琴

复旦大学物理系

6.23, 2011

# Outline

- 数据处理
- 模型假定
- 理论结果
- 数据支持

# Theoretical Prediction

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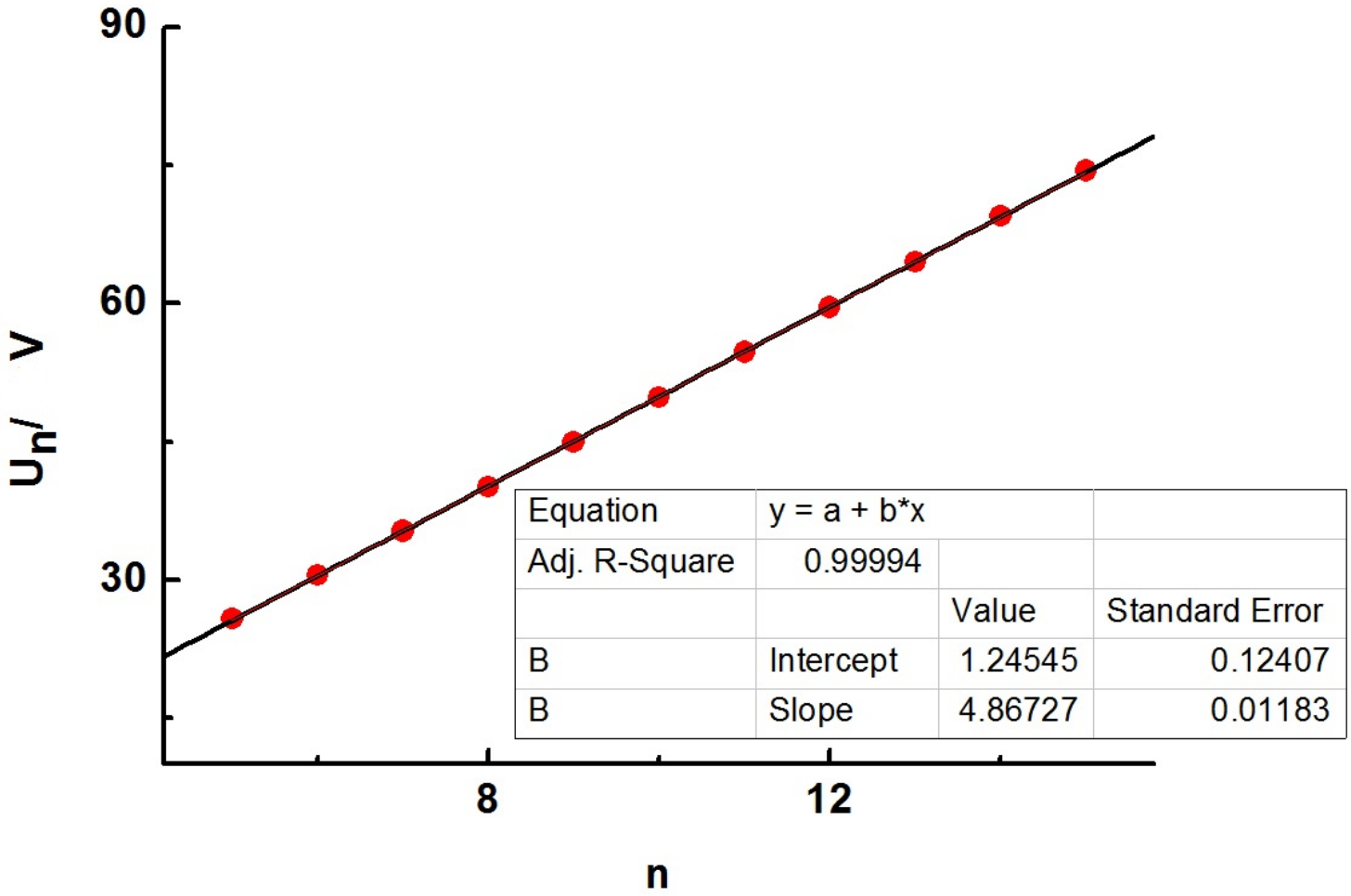
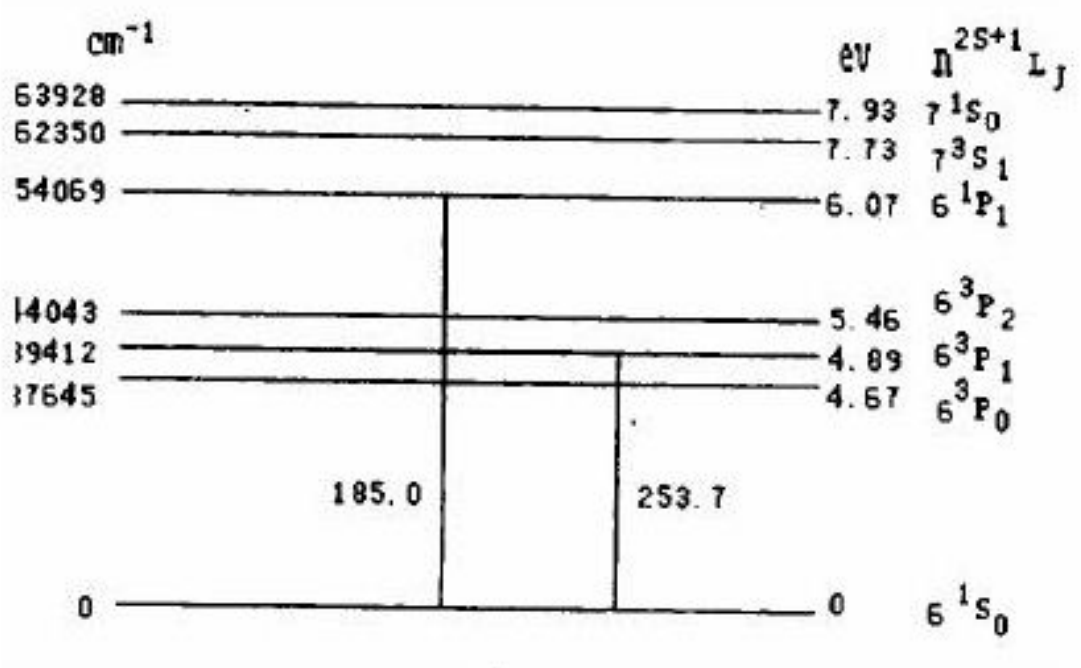
$180°C$的$I_p - V_{G2_k}$曲线对峰位$U_n$和序号$n$直线拟合。



# Not the Lowest One




$6^3P_1$能级激发电位4.89eV
$6^3P_0$能级激发电位4.67eV

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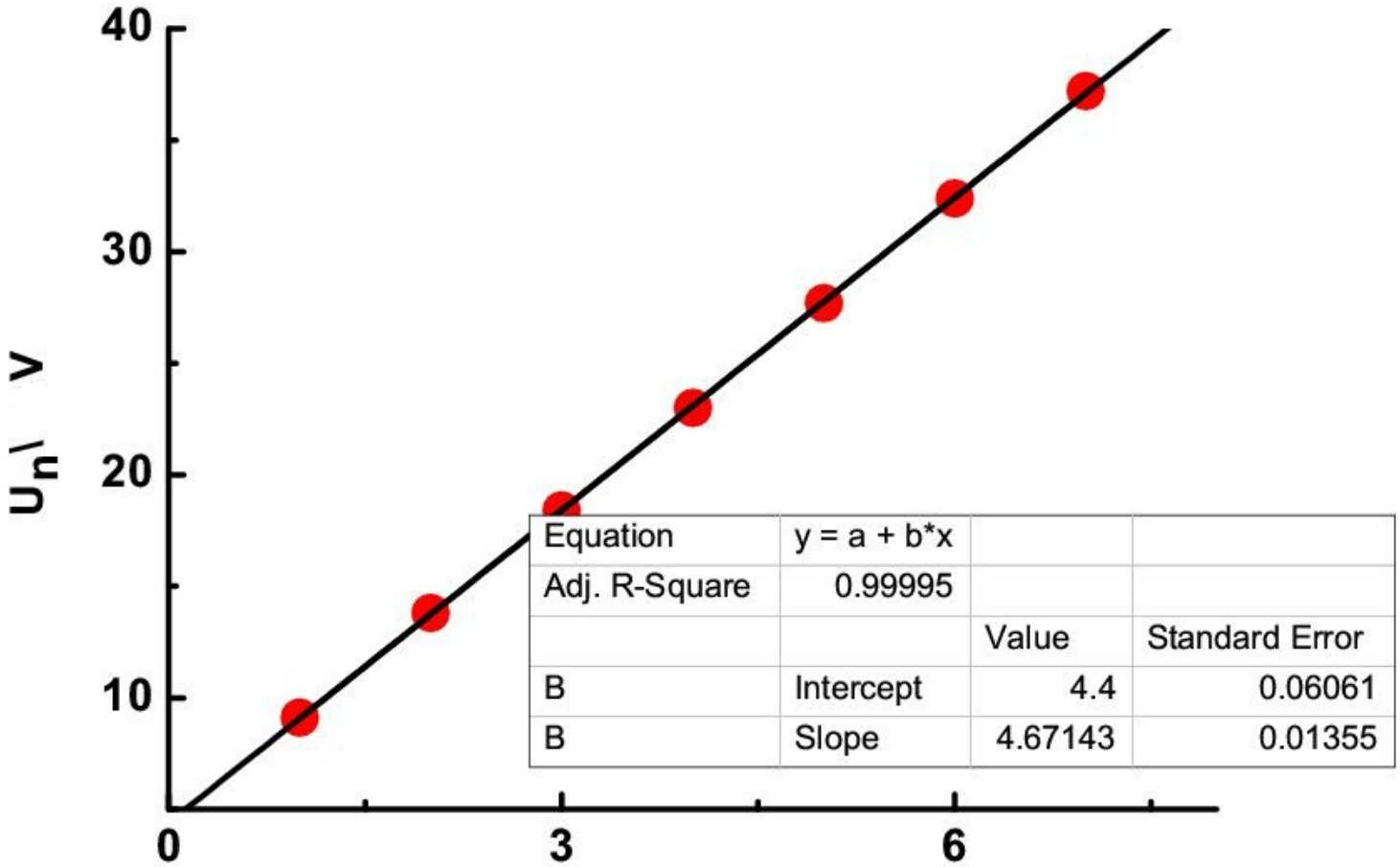
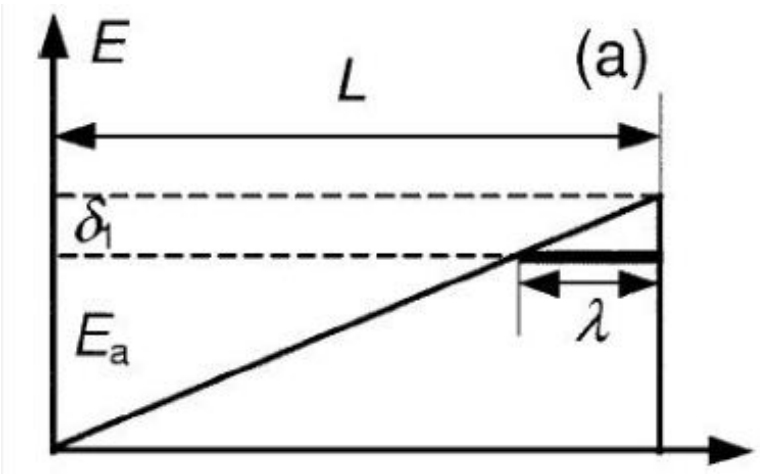
$180°C$的$I_p - V_{G2_k}$曲线对谷位$U_n$和序号$n$直线拟合。

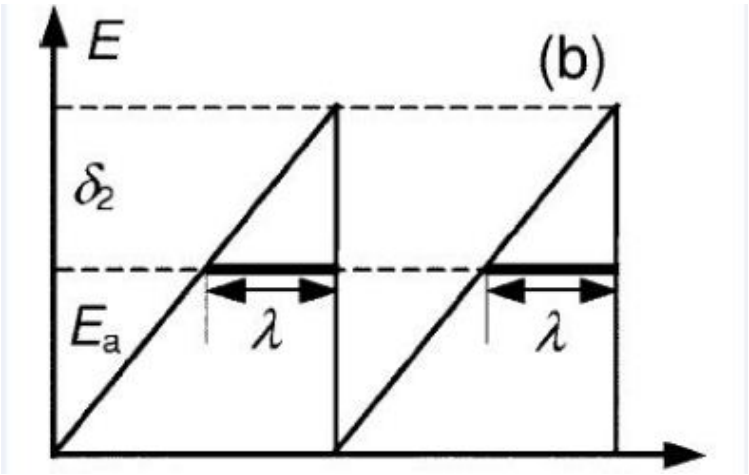



| Equation | y = a + b*x | | |
|---|---|---|---|
| Adj. R-Square | 0.99995 | | |
| | | Value | Standard Error |
| B | Intercept | 4.4 | 0.06061 |
| B | Slope | 4.67143 | 0.01355 |

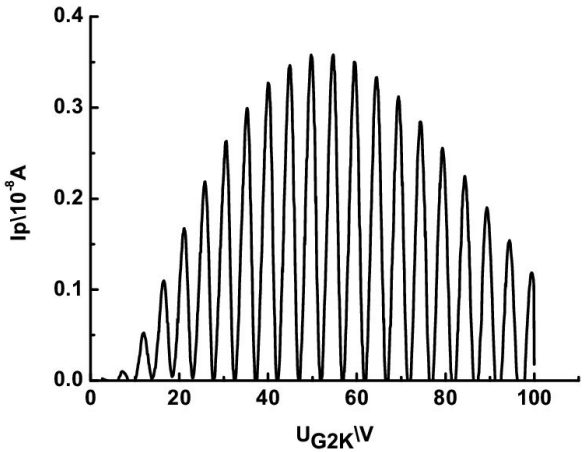
Am. J. Phys. 74(5), May 2006




(a) 模型




(b) 模型




(c) 去本底后曲线

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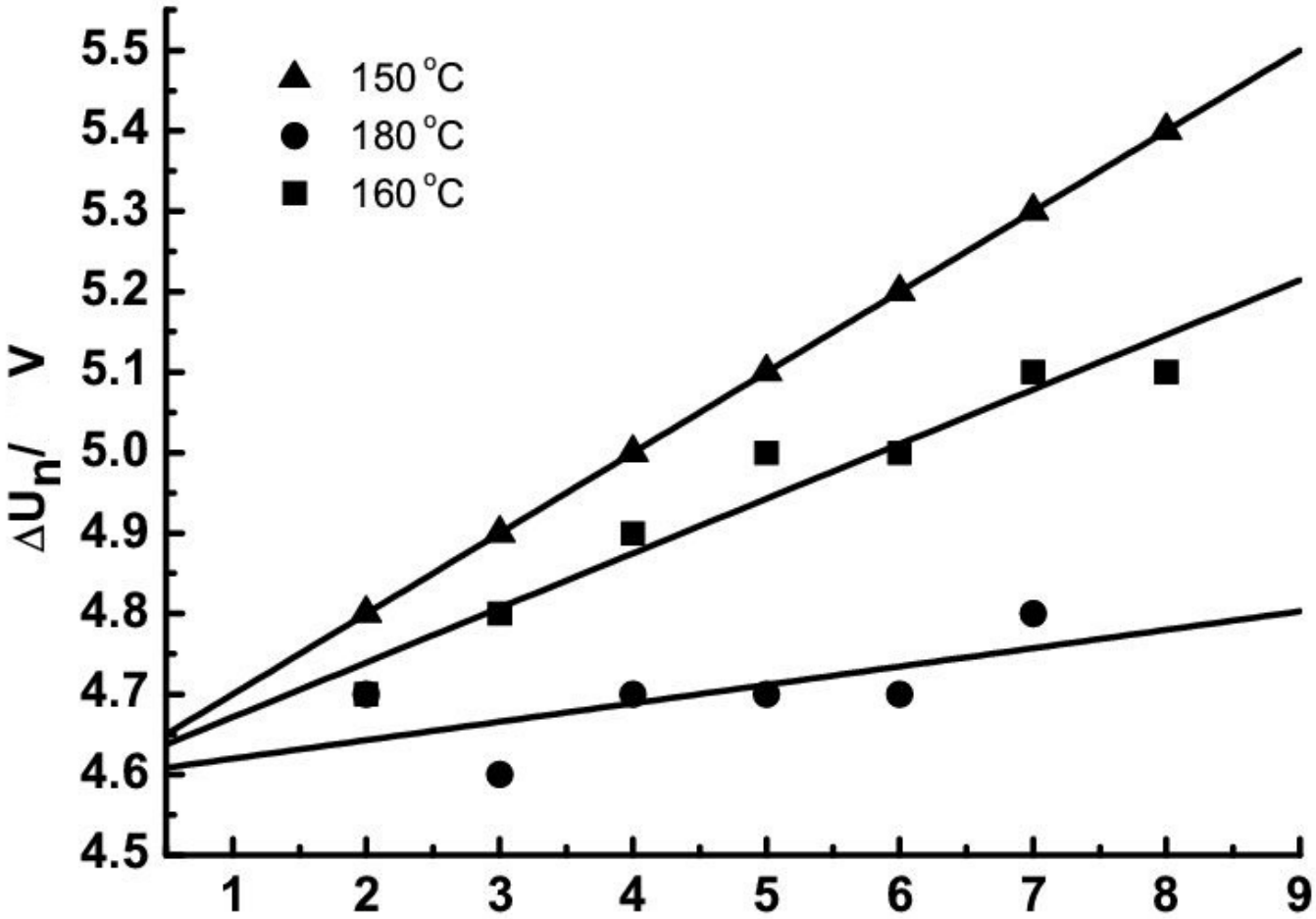
- $\Delta E(0.5) \equiv E_a$

# Data Support



# Mean Free Path

$$\lambda = \frac{L}{2E_a}\frac{\mathrm{d}\Delta E(n)}{\mathrm{d}n} \tag{7}$$

| $T/°C$ | 150 | 160 | 180 |
|---|---|---|---|
| $\frac{L}{2E_a}\frac{\mathrm{d}\Delta E(n)}{\mathrm{d}n}/mm$ | 0.05 | 0.04 | 0.02 |
| $\lambda/mm$ | 0.09 | 0.05 | 0.03 |

# Conclusions

- 电流极大值的电压与$6^3P_1$能级的激发电位有关
- 电流极小值的电压与$6^3P_0$能级的激发电位有关

# Great Thanks


- 白翠琴老师的指导和解答
- 徐迪飞同学的帮助

# Question Time

Thank you for your attention