

LAB 6

Debye

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① 1:2:2



$$2d \sin \theta = n \cdot \lambda$$

$$2d \left(\frac{r}{\sqrt{135_{\text{mm}}^2 + r^2}} \right) = n \lambda = n \frac{1.226 \text{ nm}}{\sqrt{V_0/V}}$$

$$d = \frac{n}{2} \left(\frac{1.226 \text{ E-9}}{\sqrt{V}} \right) \left(\frac{\sqrt{135_{\text{mm}}^2 + r^2}}{V} \right)$$

$$n=1, r=4.3 \text{ cm}/2 \rightarrow d = 5.5 \times 10^{-11} \text{ m}$$

$$n=3, r=1.6 \text{ cm}/2 \rightarrow d = 1.65 \times 10^{-10} \text{ m}$$

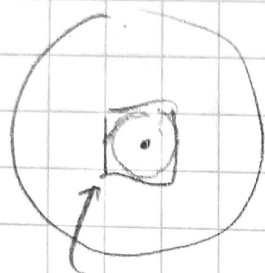
$$n=2, r=2.4 \text{ cm}/2 \rightarrow d = 1.96 \times 10^{-10} \text{ m}$$

$$n=1, r=1.6 \text{ cm}/2 \rightarrow d = 1.47 \times 10^{-10} \text{ m}$$

② 1:4:3
 If you reduce the accelerating voltage the grid expands

why: less momentum \rightarrow increase λ
 $\rightarrow d \propto \lambda$

③



image

