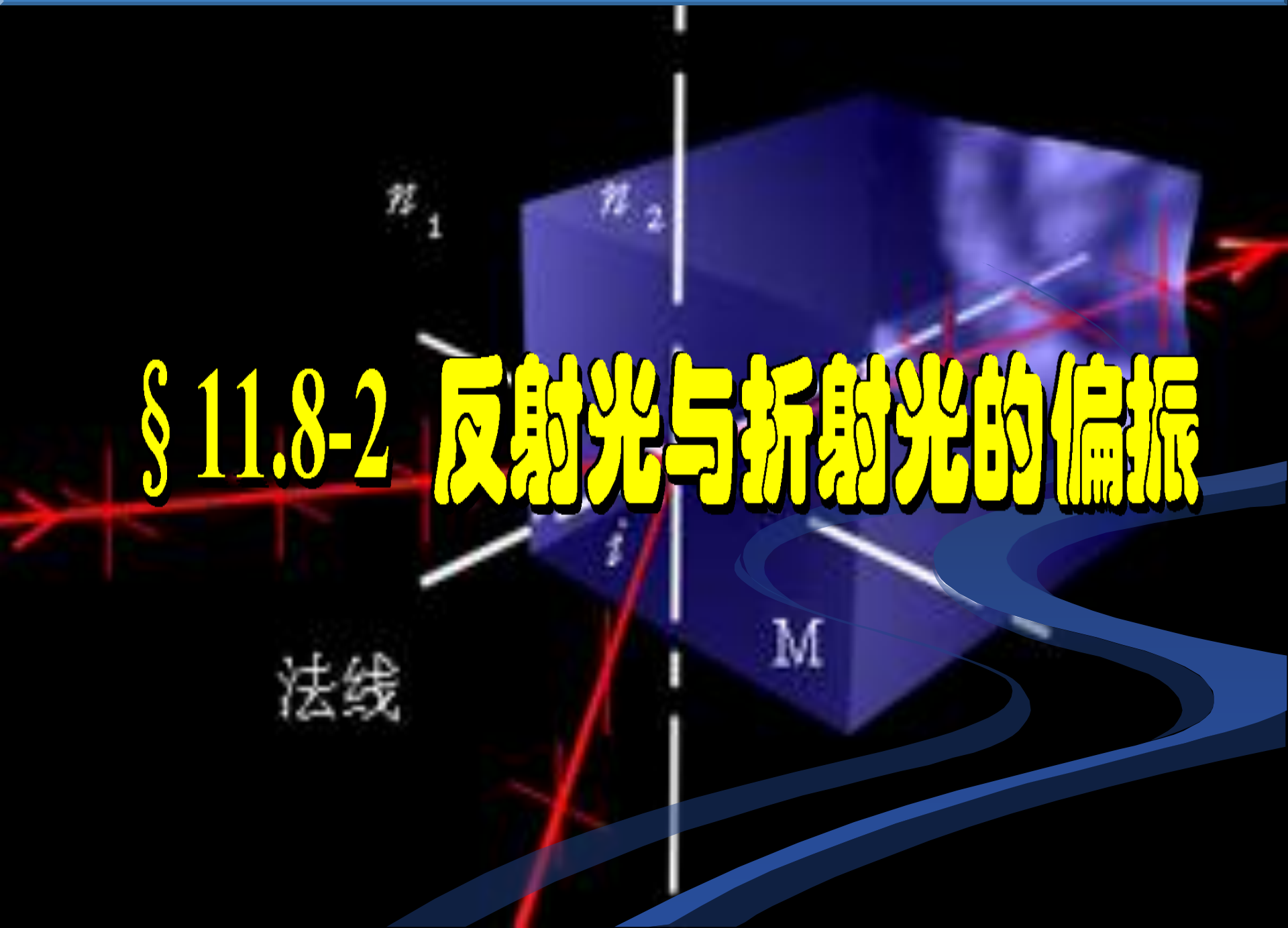
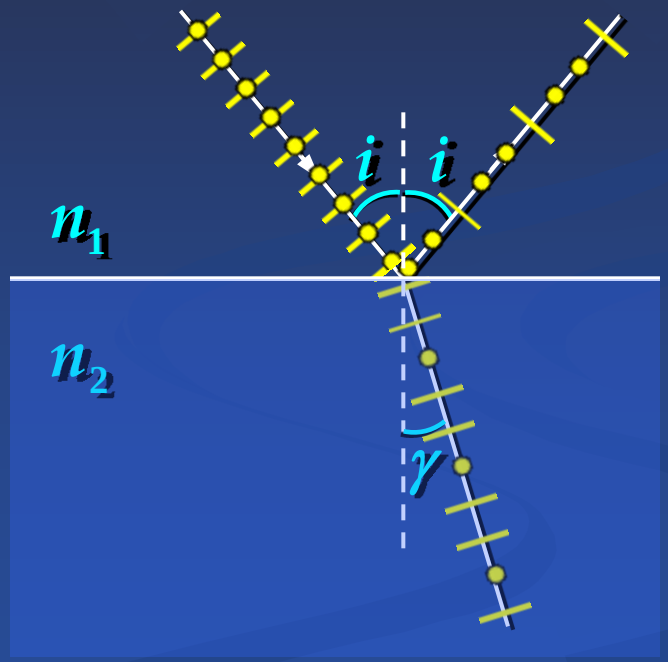


§11.8-2 反射光与折射光的偏振

一、反射光与折射光的偏振特性

理论指出：当 $i = i_0$ 时，反射光为线偏振光！



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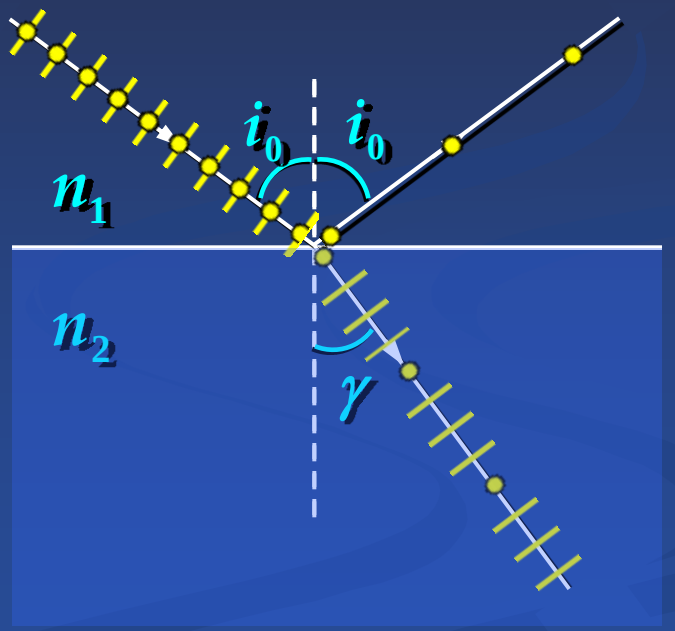

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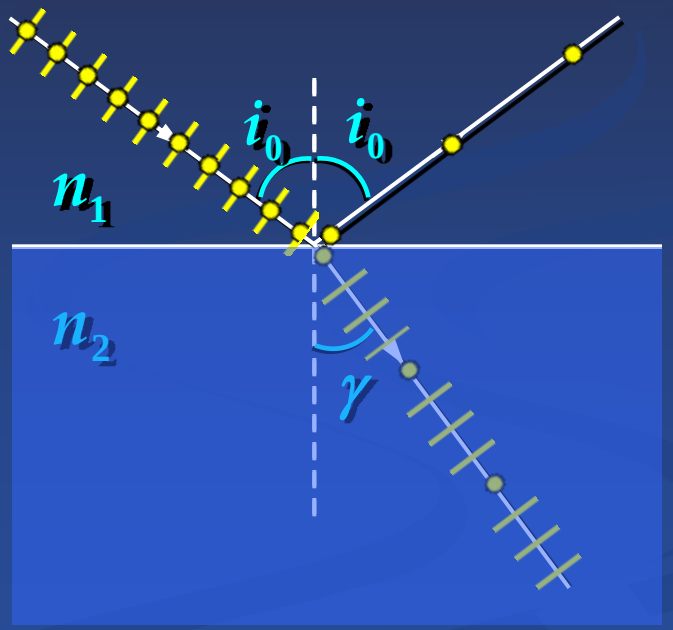
理论可证：

$$tgi_0 = \frac{n_2}{n_1}$$

（布儒斯特定律）



i_0：布儒斯特角/起偏振角！

折射定律：

$$n_1 \cdot \sin i_0 = n_2 \cdot \sin\gamma \longrightarrow \frac{n_2}{n_1} = \frac{\sin i_0}{\sin\gamma}$$

$$tg i_0 = \frac{n_2}{n_1} = \frac{\sin i_0}{\sin\gamma}$$

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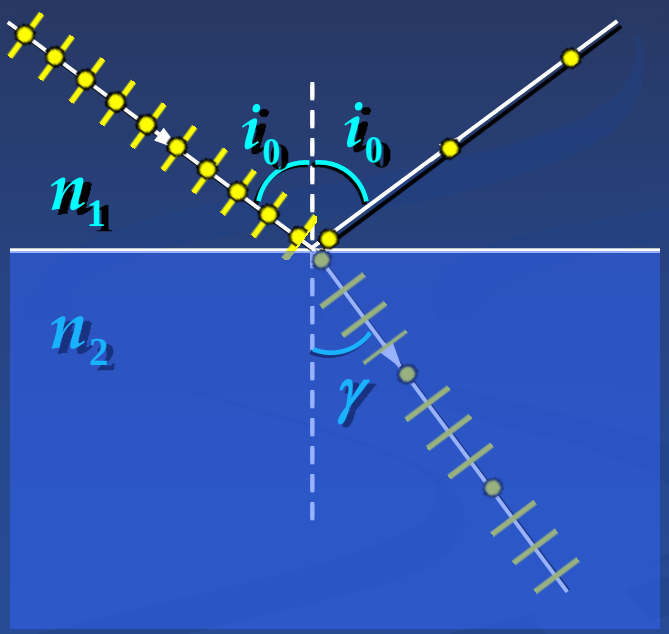

（布儒斯特定律）

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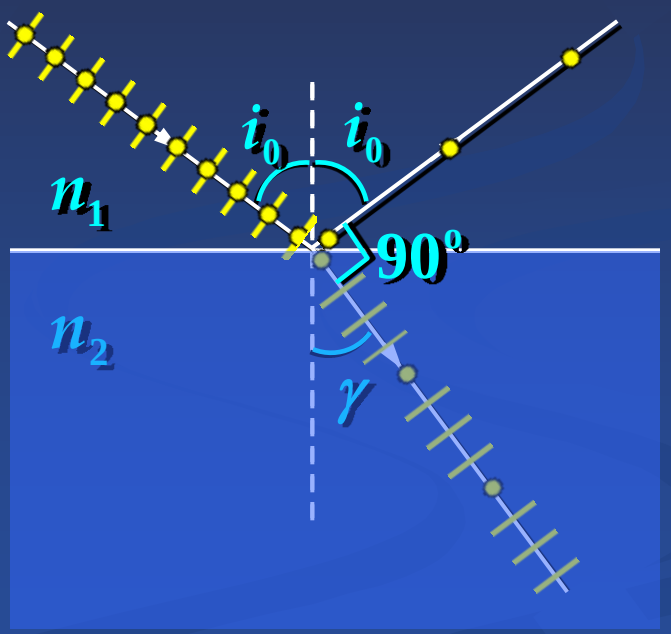
$$\cos i_0 = \sin\gamma$$

$$i_0 + \gamma = 90^o$$



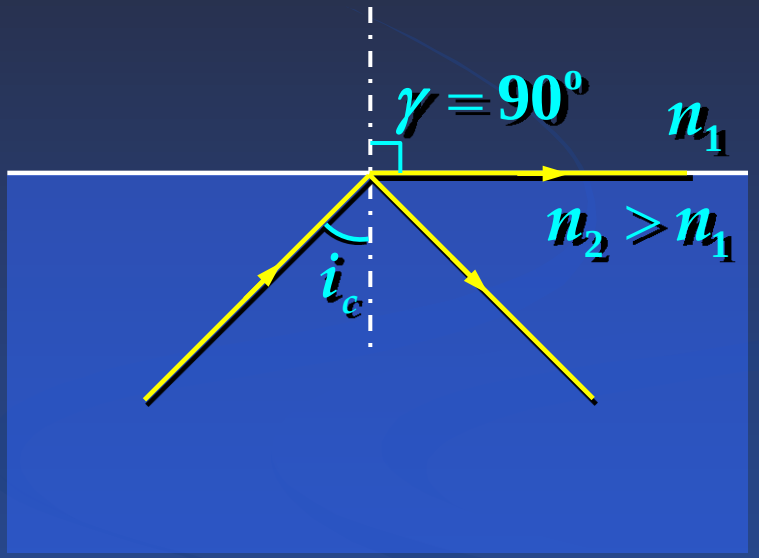
即：反射光线⊥折射光线！

例 某种透明物质的临界角为45°，求其布儒斯特角。

解 设 $n_2 > n_1$，则：$n_2 \cdot \sin i_c = n_1 \cdot \sin 90^\circ$

$$\frac{n_2}{n_1} = \frac{\sin 90^\circ}{\sin i_c} = \sqrt{2}$$

若光从 $n_2 \rightarrow n_1$，则：



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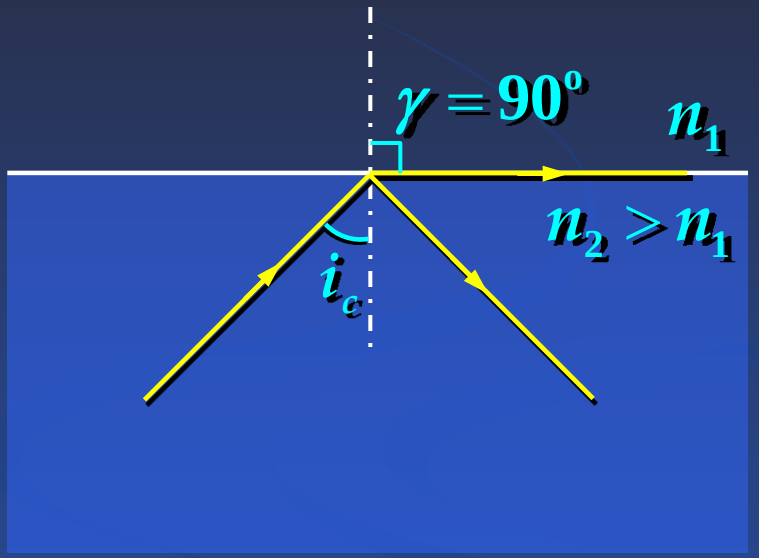
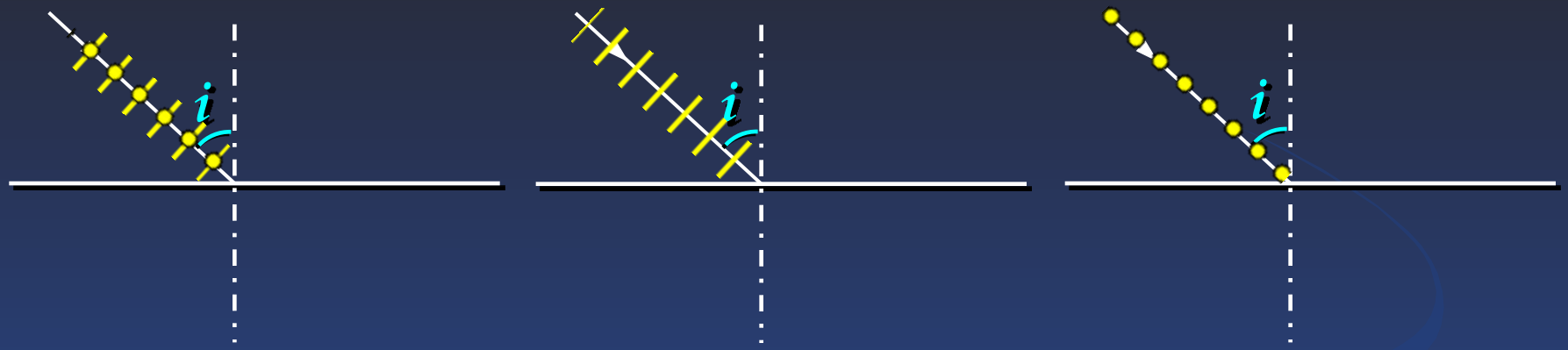


若光从 $n_2 \rightarrow n_1$，则：

$$tgi_0 = \frac{n_1}{n_2} = \frac{\sqrt{2}}{2} \qquad i_0 \approx 35.3^\circ$$

若光从 $n_1 \rightarrow n_2$，则：$tgi_0 = \frac{n_2}{n_1} = \sqrt{2}$　　$i_0' \approx 54.7^\circ$

课堂练习 说明下列情况下反射光与折射光的偏振特性。



$$tgi_0 = \frac{n_1}{n_2} = \frac{\sqrt{2}}{2} \qquad i_0 \approx 35.3^{o}$$

若光从 $n_1 \rightarrow n_2$，则：$tgi_0 = \frac{n_2}{n_1} = \sqrt{2}$　　$i_0' \approx 54.7^{o}$

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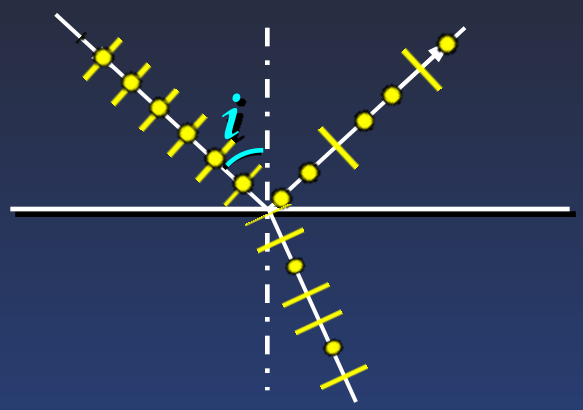
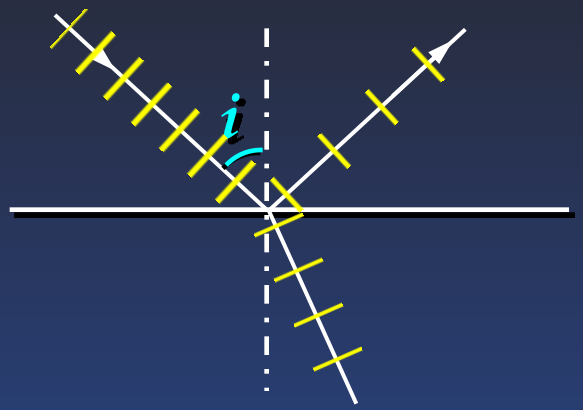
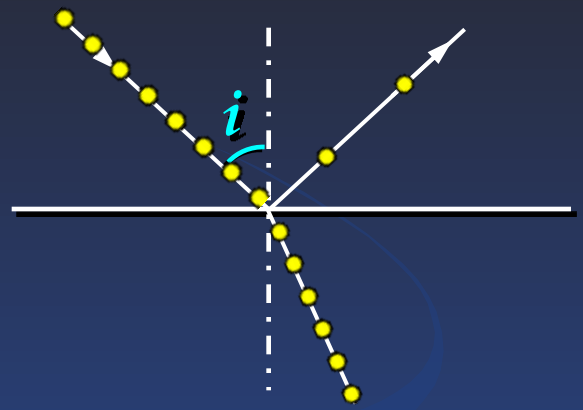
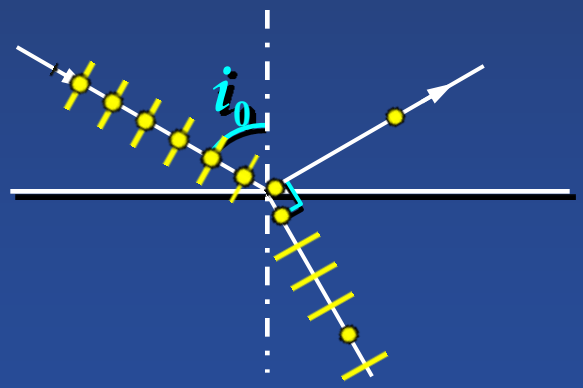
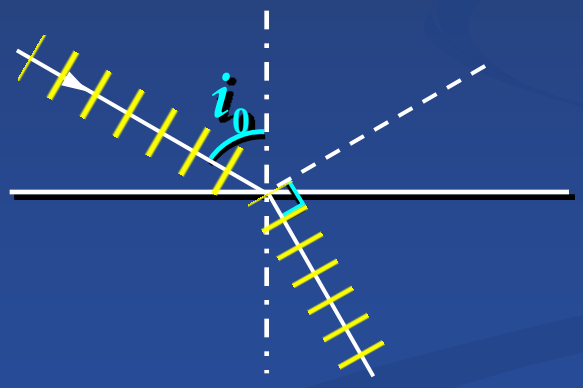
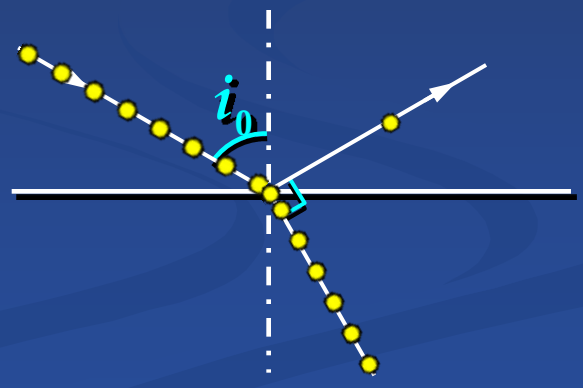




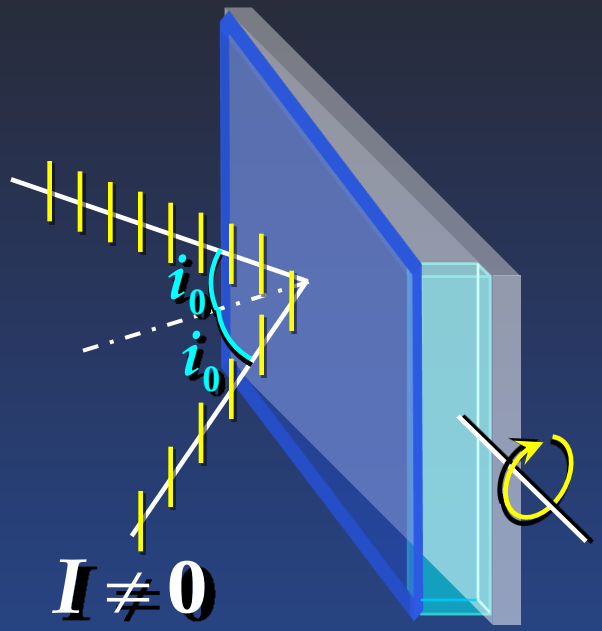


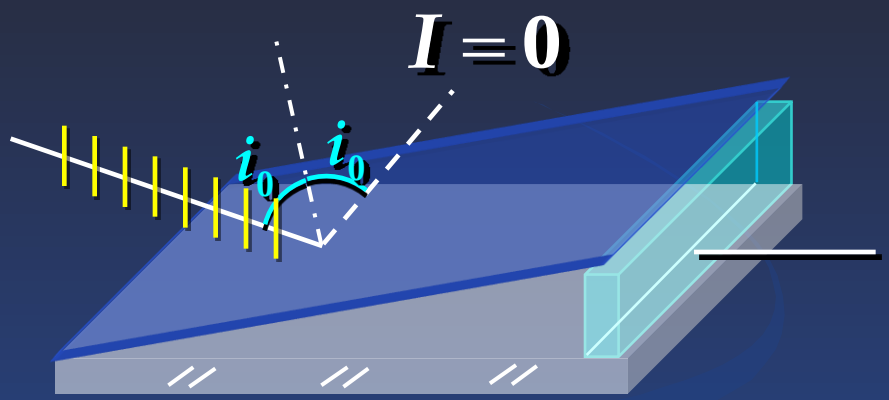


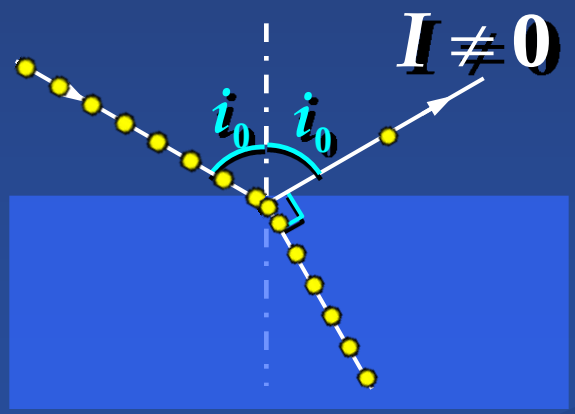


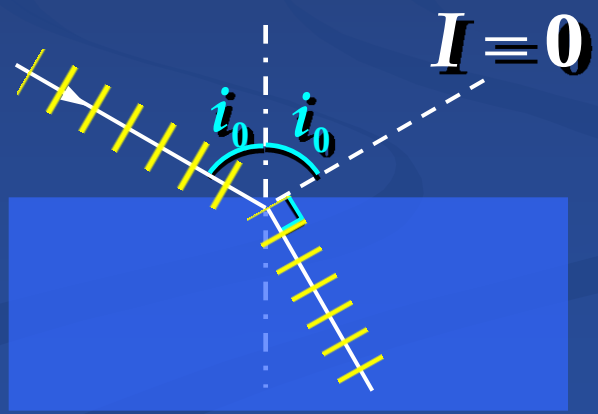


二、反射面用作检偏器

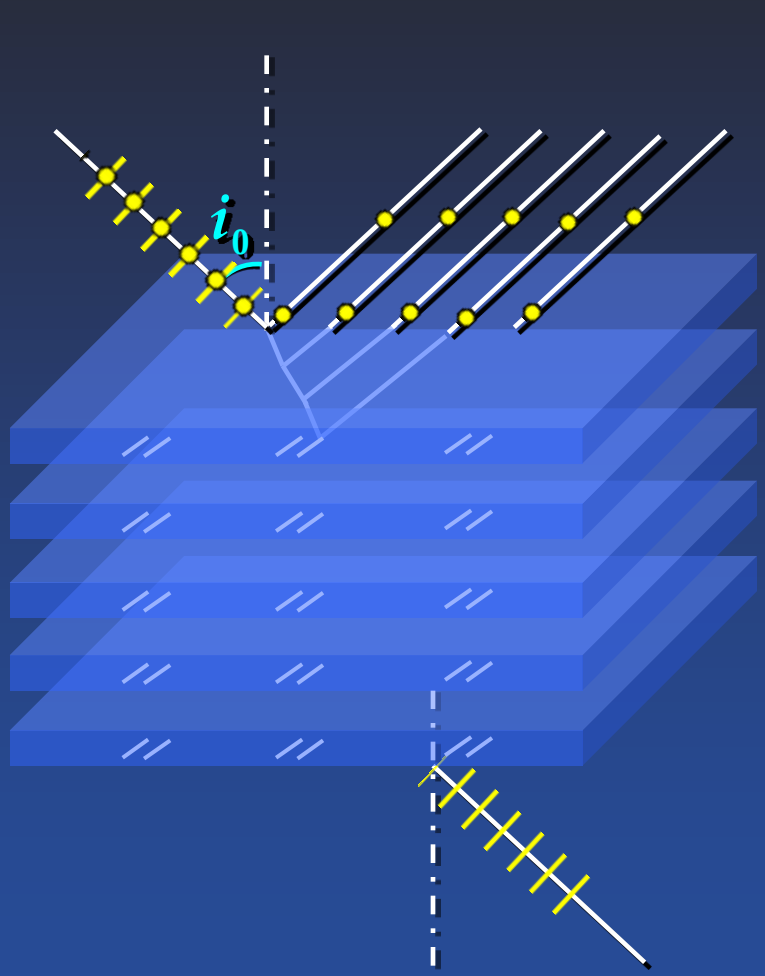


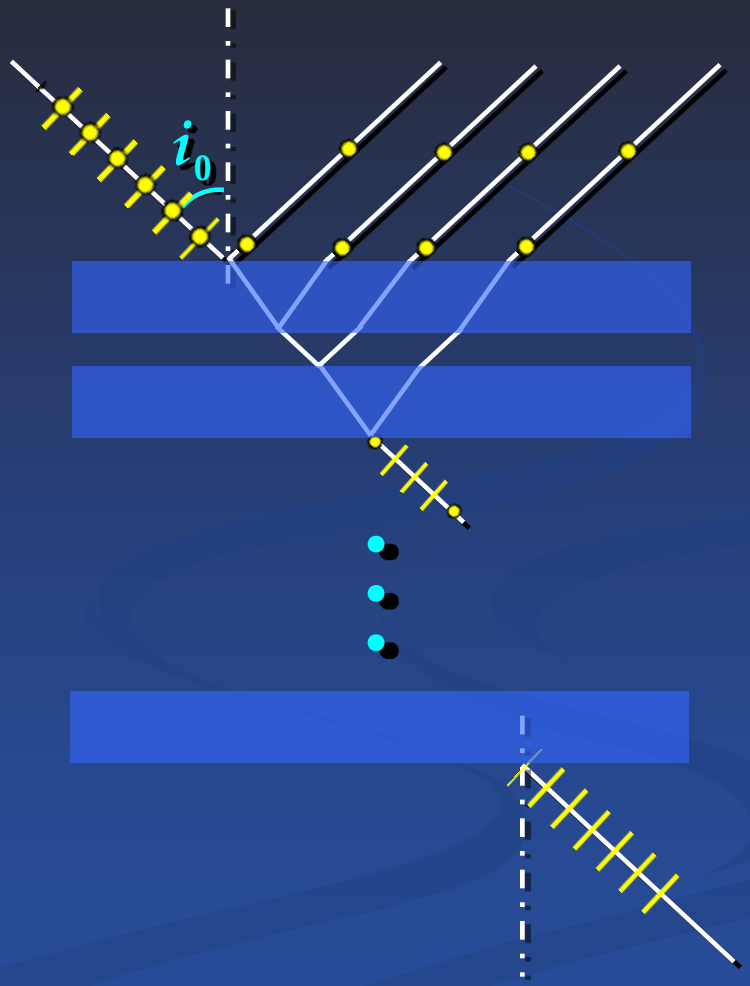






三、玻璃片堆





归纳：

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