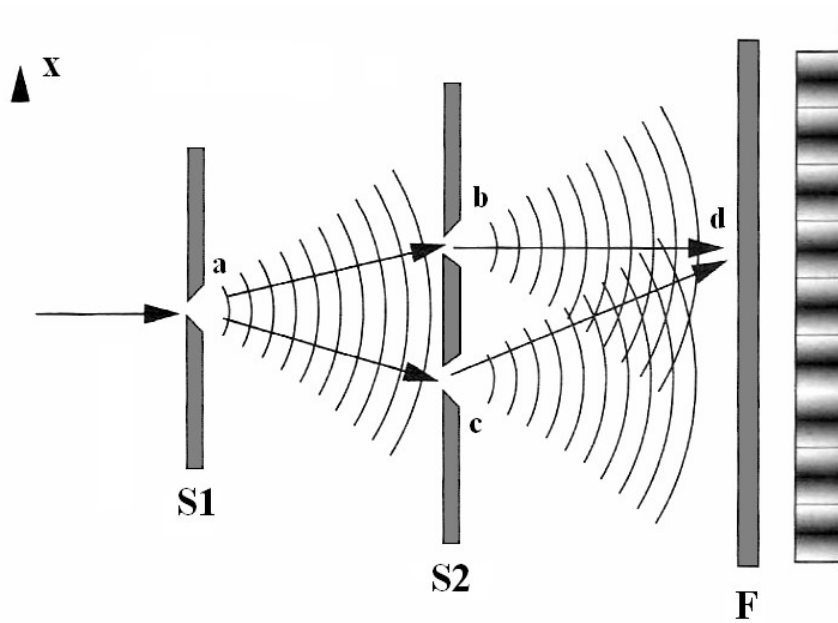


• 光的折射率是依電磁學方程式 (Maxwell's equation) 決定的

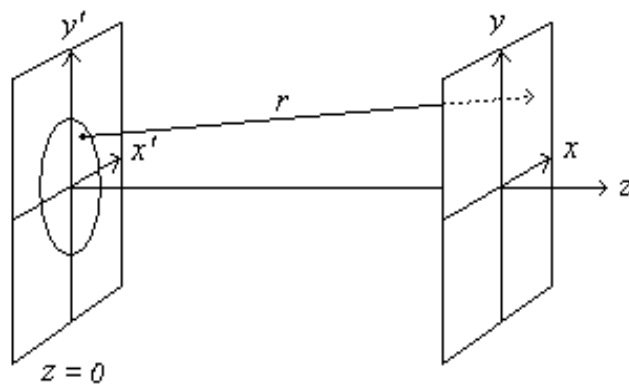
• Young's double-slit experiment:

原理: optical path difference(光程差)

$$I_p = |\psi_{1p} + \psi_{2p}|^2, \quad \psi_i : \text{振幅}$$



• Fresnel diffraction theory



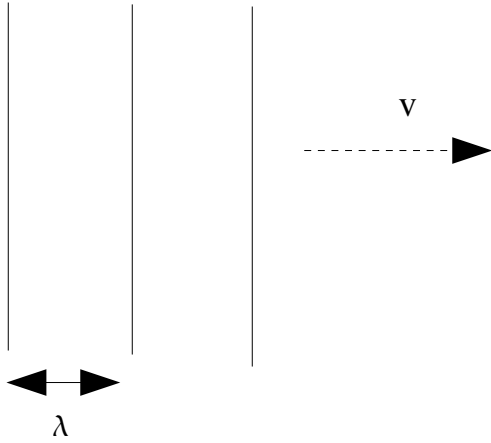
在屏幕的陰影區,並不是因為沒有光到達,而是因為光波在該區抵消了.

⇒ 相消性干涉

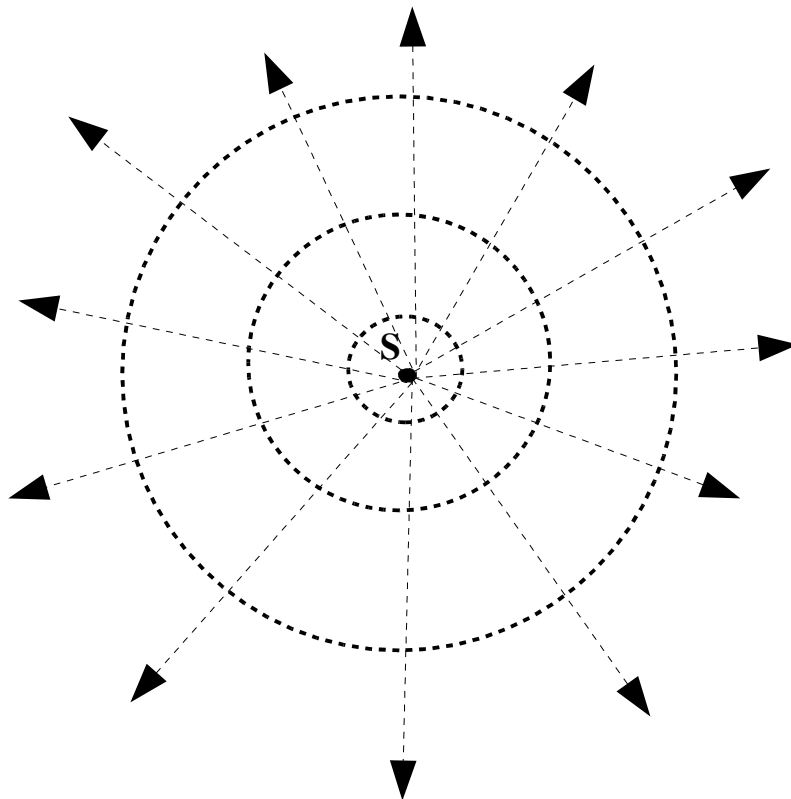
• 波動方程式(by Kirchhoff)

$$\psi = \psi(\vec{r}, t) \quad \nabla^2 \psi(\vec{r}, t) = \frac{1}{v^2} \frac{\partial^2 \psi(\vec{r}, t)}{\partial t^2}$$

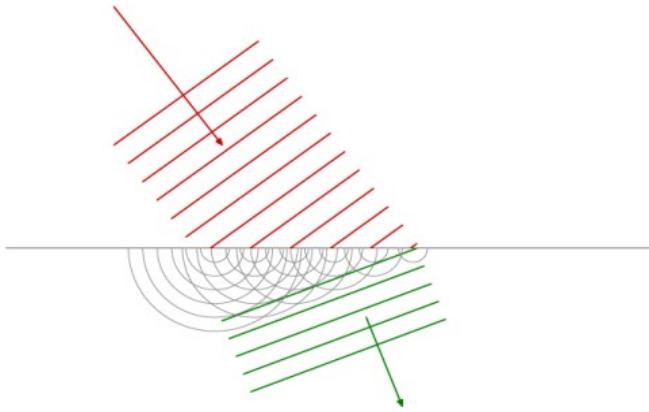
(1) 平面波の解: $\psi(\vec{r}, t) = A \sin(\vec{k} \cdot \vec{r} - \omega t)$



(2) 球面波の解: $\psi(\vec{r}, t) = A \frac{\sin(\vec{k} \cdot \vec{r} - \omega t)}{r}$



- 波前(wavefront)



- 惠更斯原理(Huygens principle)
波前理論,任一時刻,任一波前上的任一點,都可看成下一波的波源.