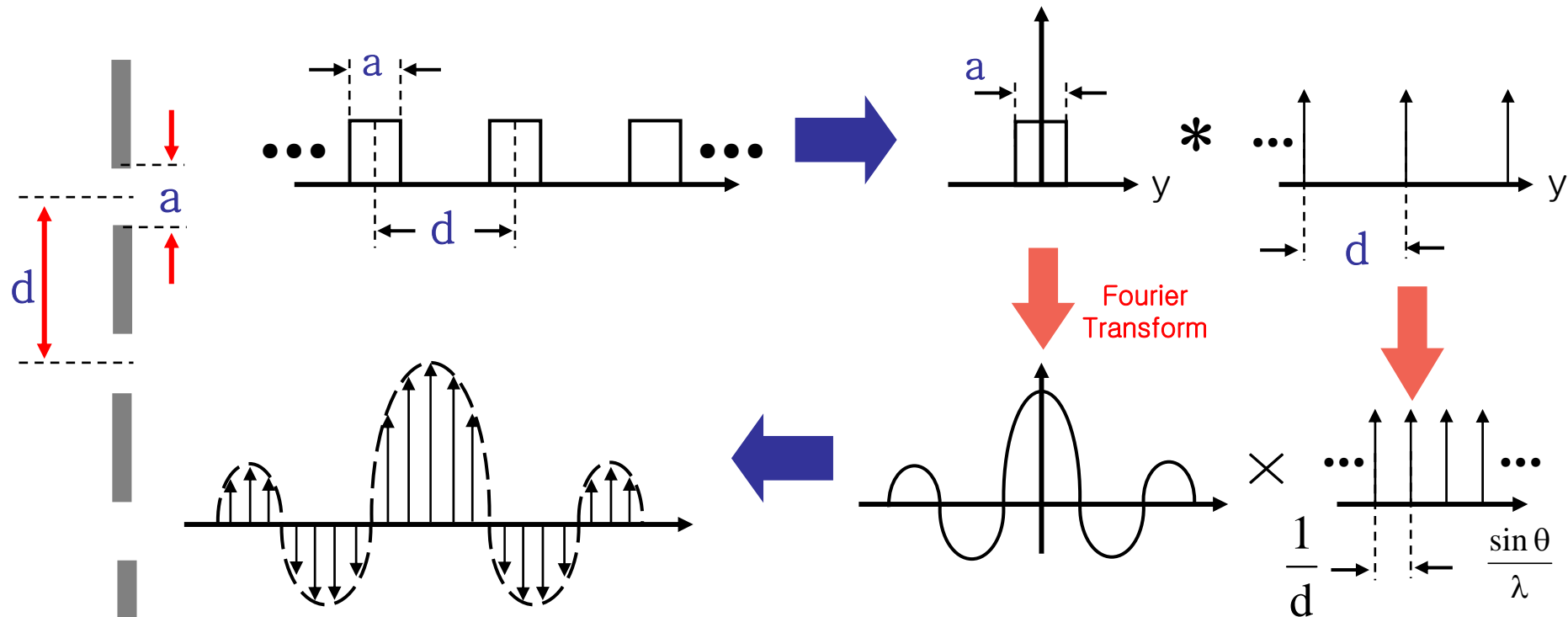


Lect. 9: Diffraction Gratings

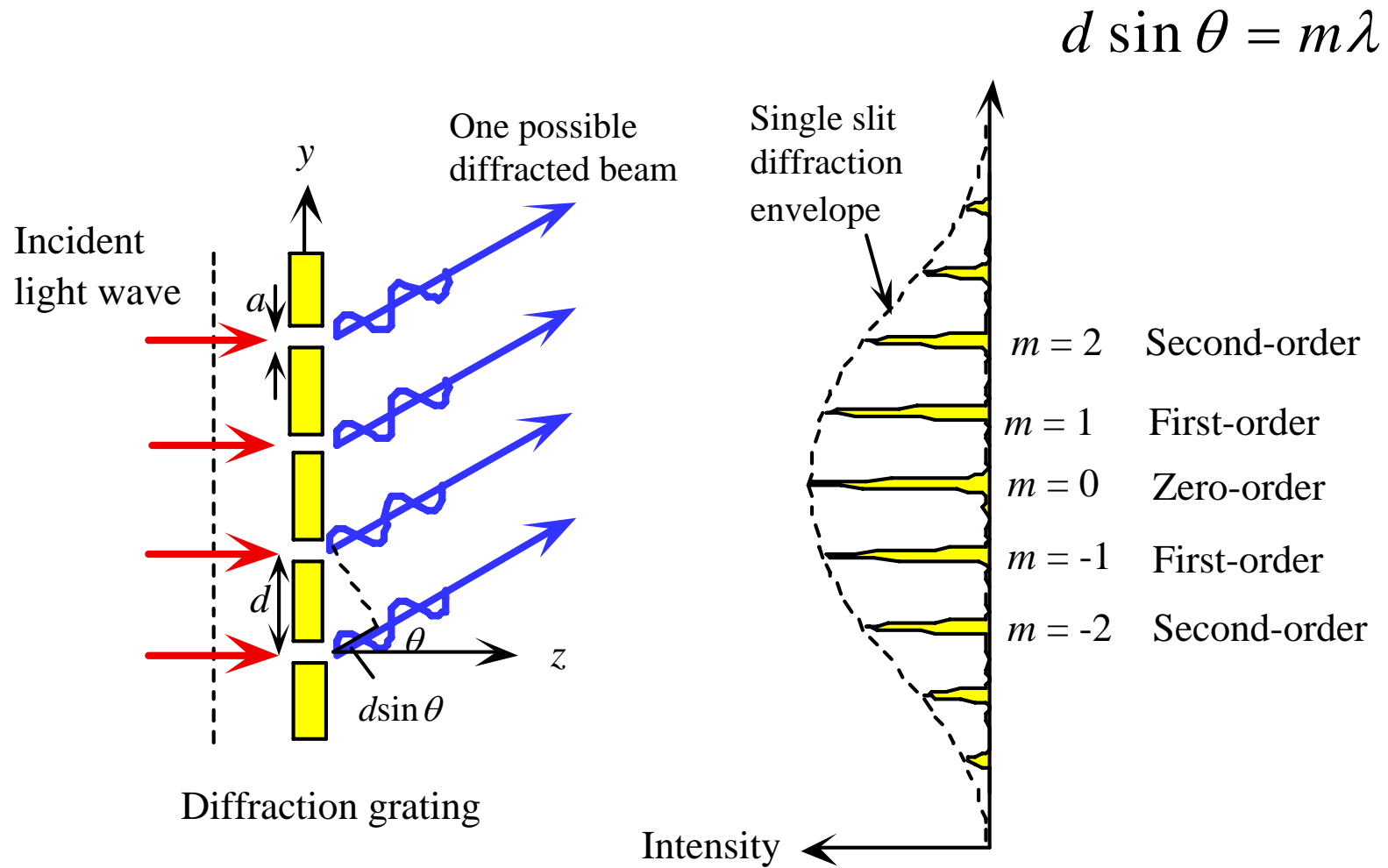


Diffracted light from periodic slits (Grating) => only at discrete angles

$$\frac{\sin \theta}{\lambda} = m \cdot \frac{1}{d}; \quad d \sin \theta = m \lambda$$

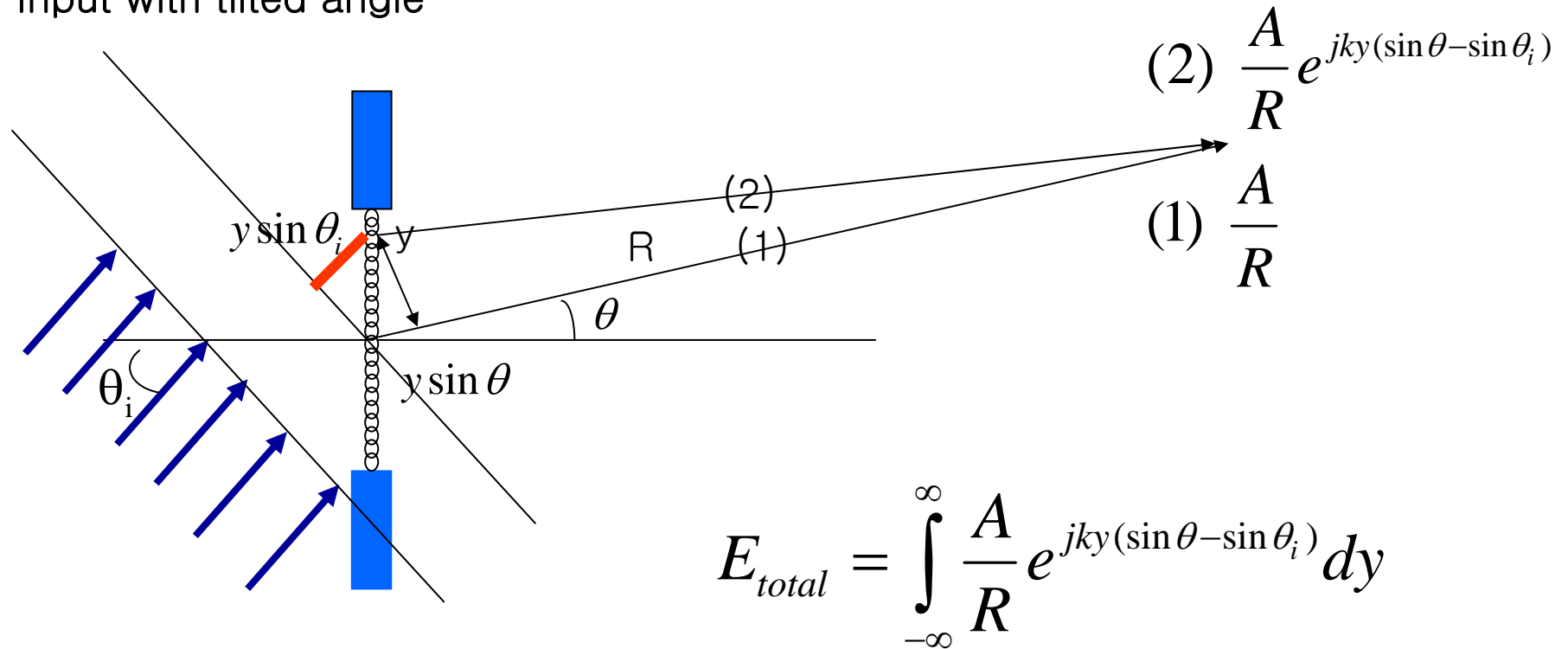
Grating equation, Bragg Condition

Lect. 9: Diffraction Gratings



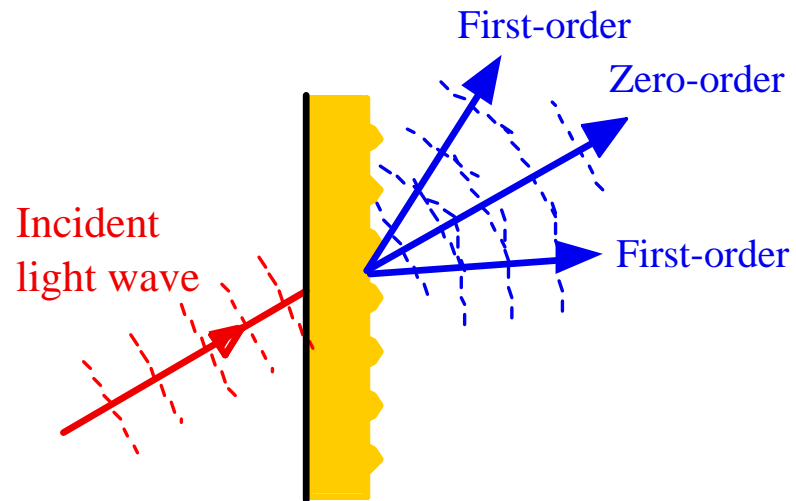
Lect. 9: Diffraction Gratings

Input with tilted angle



Lect. 9: Diffraction Gratings

Tilted incidence on grating



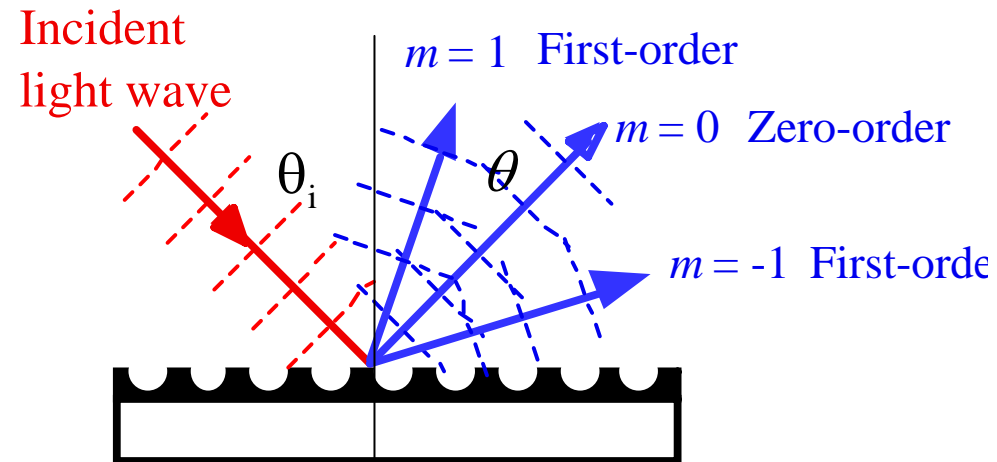
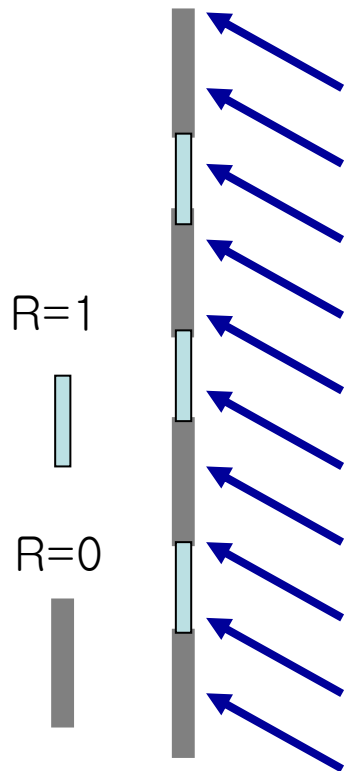
$$d \sin \theta = m \lambda$$

$$\rightarrow d(\sin \theta - \sin \theta_i) = m \cdot \lambda$$

Lect. 9: Diffraction Gratings

Reflection-type grating: Same diffraction equation applies

$$d(\sin \theta - \sin \theta_i) = m \cdot \lambda$$



(b) Reflection grating

Grating can be realized as long as reflection surface is **periodic**.

Gratings are widely used as λ demultiplexer.