Multiple Slits:
(Diffraction Grating – N slits with spacing d)

Assume screen is very far away (L>>d):

Path length difference 1-2 = d sinθ = λ

Path length difference 1-3 = 2d sinθ = 2λ

Path length difference 1-4 = 3d sinθ = 3λ
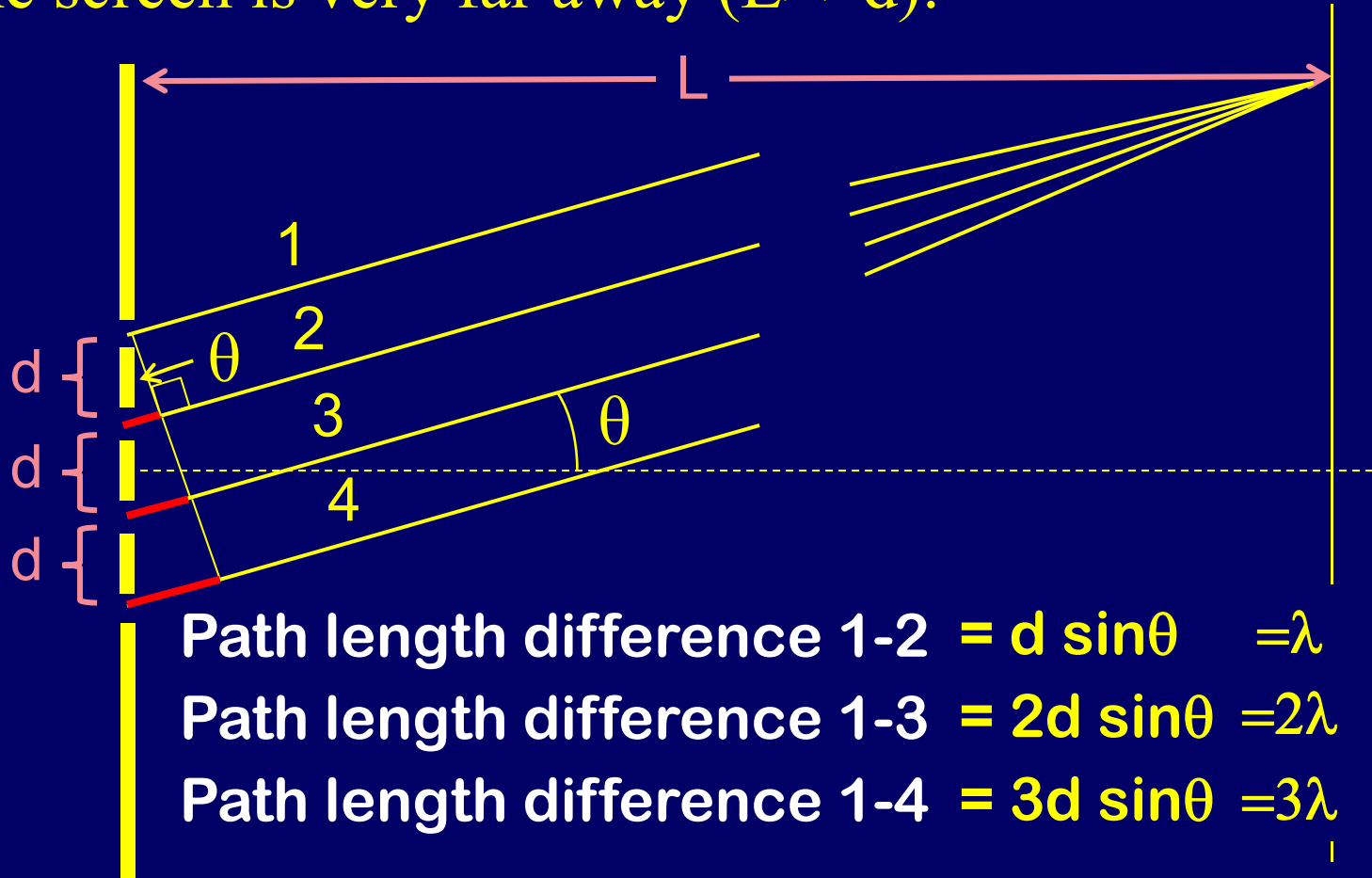
Constructive interference for all paths when

d sin(θ) = mλ m = 0, ±1, ±2