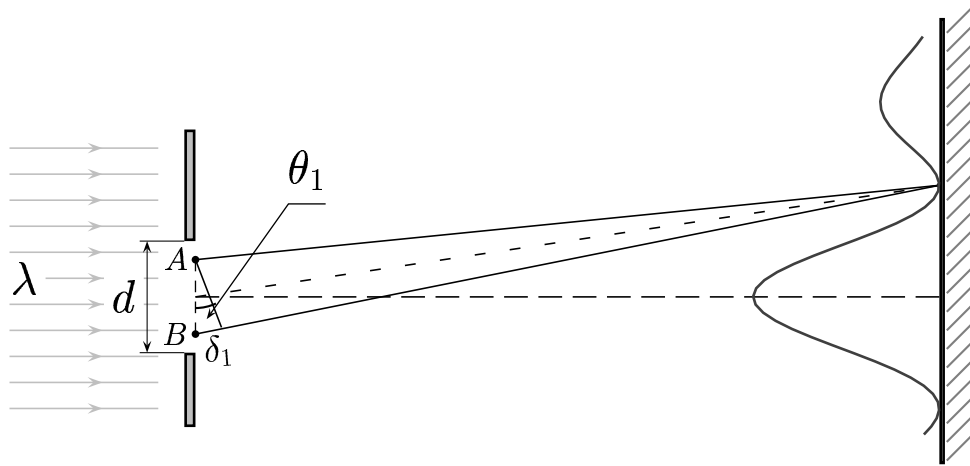


B. Represent a single-slit of width  $d$  by two effective point-sources  $A$  and  $B$ .



Determine the path difference  $\delta_1$  at the first minimum.

- A)  $\delta_1 = \frac{\lambda}{4}$
- B)  $\delta_1 = \frac{\lambda}{2}$
- C)  $\delta_1 = \frac{3\lambda}{4}$
- D)  $\delta_1 = \lambda$

At the first minimum the phase difference is  $k \delta_1 = \pi$ . Therefore

$$\delta_1 = \frac{\pi}{k} = \frac{\pi}{\frac{2\pi}{\lambda}} = \frac{\lambda}{2}$$

Answer **B**.

38.02-01 Effective Double Slit Model 2004-3-24