



$$B(x, y, z) = B(z)$$

$$\vec{B} = B(z) \hat{e}_y$$

$$\mu_0 I' = \int_1^2 \vec{B} \cdot d\vec{l} + \int_2^3 \vec{B} \cdot d\vec{l} + \int_3^4 \vec{B} \cdot d\vec{l} + \int_4^1 \vec{B} \cdot d\vec{l} =$$

$$B(0) = 0$$

$$I' = I \cdot \frac{2zh}{Ld}$$

$$= \int_1^2 B(z) d\vec{l} + \int_2^3 \vec{B}(z) \cdot d\vec{l} = -h B(z) - h B(z) = -2h B(z)$$

$$B(z) = \frac{-\mu_0 I}{\cancel{2h}} \frac{\cancel{2zh}}{Ld} = \frac{-\mu_0 I z}{Ld} \quad \leftarrow \text{for } |z| \leq \frac{d}{2}$$

$$\text{for } |z| \geq \frac{d}{2}$$

$$I' = I \cdot \frac{h}{L} \quad B(z) = \frac{-\mu_0 I'}{2h} = \frac{-\mu_0 I}{2L}$$