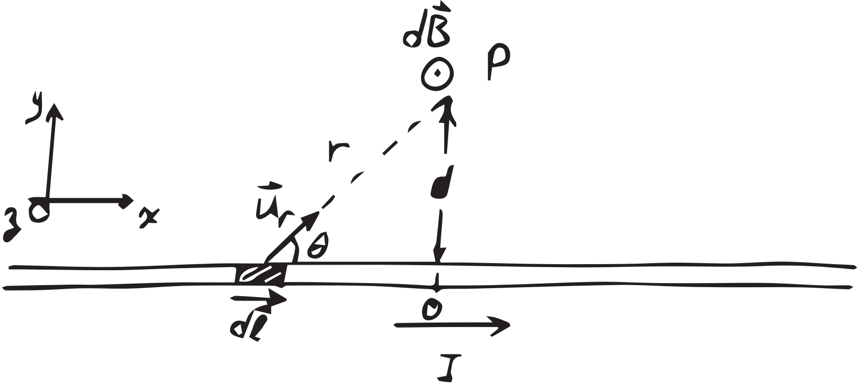

$$\vec{B} = \int_{fil} d\vec{B}$$ Principe de superposition

$$= \int_{fil} \frac{\mu_0 I}{4\pi} \frac{d\vec{l} \times \vec{u}_r}{r^2}$$ Loi de Biot-Savart

$$= \frac{\mu_0 I}{4\pi} \int_{fil} \frac{dl \sin\theta}{r^2} \hat{z}$$

$$= \frac{\mu_0 I}{4\pi} \hat{z} \int_{fil} \frac{dx\, d}{r^3}$$

$$= \frac{\mu_0 I d}{4\pi} \hat{z} \int_{-\infty}^{\infty} \frac{1}{(x^2+d^2)^{3/2}} dx$$

$$\frac{\mu_0 I d}{4\pi} \hat{z} \left[\frac{x}{d^2\sqrt{x^2+d^2}} \right]_{-\infty}^{\infty}$$

$$= \frac{\mu_0 I}{4\pi d} \hat{z} \left(\lim_{a\to\infty} \frac{a}{\sqrt{a^2+d^2}} - \lim_{b\to-\infty} \frac{b}{\sqrt{b^2+d^2}} \right)$$

$$= \frac{\mu_0 I}{4\pi d}\, 2\, \hat{z}$$

$$\vec{B} = \frac{\mu_0 I}{2\pi d} \hat{z}$$