

$$\frac{d^2x}{dz^2} = \frac{q}{p}R \left[\frac{dx}{dz} \frac{dy}{dz} B_x - \left(1 + \left(\frac{dx}{dz} \right)^2 \right) B_y + \frac{dy}{dz} B_z \right]$$

$$\frac{d^2y}{dz^2} = \frac{q}{p}R \left[\left(1 + \left(\frac{dy}{dz} \right)^2 \right) B_x - \frac{dx}{dz} \frac{dy}{dz} B_y - \frac{dx}{dz} B_z \right]$$