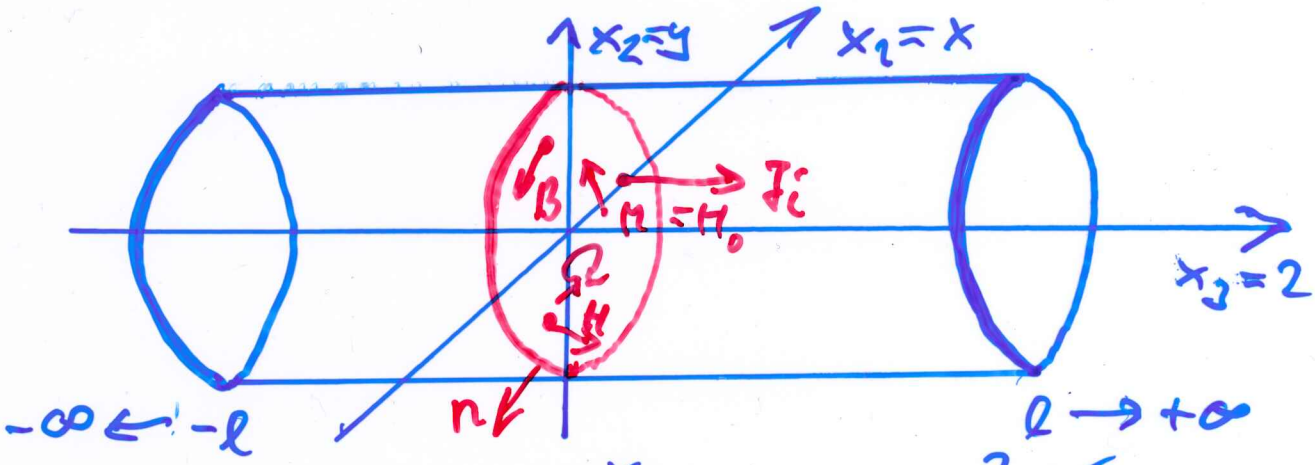
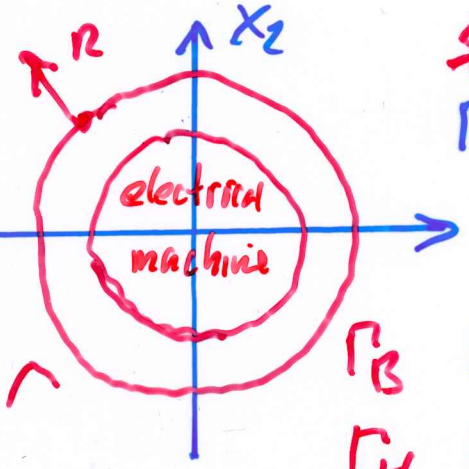
Magnetostatic Problems in 3d:

• Geometry:





$\Omega \subset \mathbb{R}^2$ ✗ Lip

$\Gamma = \partial\Omega = \overline{\Gamma_B} \cup \overline{\Gamma_H}, \ \Gamma_B \cap \Gamma_H = \emptyset$

$B \cdot n = 0$

$H \times n = -J_S = \begin{pmatrix} 0 \\ 0 \\ -J_{S,3} \end{pmatrix}$

• Assumptions:

1) $\tilde{\Omega} = \Omega \times (-l, l)$ with $l >> \operatorname{diam} \Omega$

2) $J_i = \begin{pmatrix} 0 \\ 0 \\ J_3(x_1, x_2) \end{pmatrix}, \ x = (x_1, x_2) \in \Omega$

! $\operatorname{div} J = 0$

3) $M = H_0 = \begin{pmatrix} H_{01}(x_1, x_2) \\ H_{02}(x_1, x_2) \\ 0 \end{pmatrix}, \ H = \begin{pmatrix} H_1(x_1, x_2) \\ H_2(x_1, x_2) \\ 0 \end{pmatrix}$

$x = (x_1, x_2) \in \Omega$