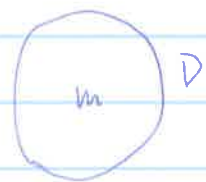
10/27 Anne de Bouard

$\mu_0 = 1$



$$\begin{cases} \operatorname{div}(H_d(m) + m) = 0 \\ \operatorname{curl}(H_d(m)) = 0 \end{cases}$$

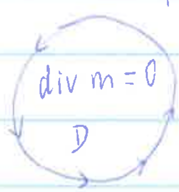
$H_d(m) \to 0 \quad x \to +\infty$

$H_d(m) = \nabla \phi_d$ $\qquad \bar{m} = \begin{cases} m & \text{in } D \\ 0 & \text{in } \mathbb{R}^3 \setminus D \end{cases}$

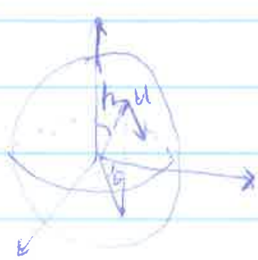
$\Delta \phi_d = -\operatorname{div}(\bar{m})$

$- \int H_d(m)\, m \, dx = \int |\nabla \phi_d|^2 dx \geq 0$

$= 0$ iff $\operatorname{div} \bar{m} = 0$



$x = r\cos\theta$



$h(r, t)$

$\forall t^*, h_0, \quad \mathbb{P}(\tau^*(h_z(h_0)) < t^*) > 0 \qquad T^* = \frac{t^*}{2}$

$h = v + z \qquad dz = Az + dW, \; T \qquad h_z(h_0, t) = h(t)$

$\partial_t v = Av + b(v + z), \quad b(v) = \frac{1}{\mu^2}\left(v - \frac{\sin 2v}{2}\right)$

1st step: Find open set $\mathcal{H}$ in V_β. $\mathcal{Z}$ in $C([0, T^*], V_\beta)$ such that for any $h_0 \in \mathcal{H}$ and $z \in \mathcal{Z}$,

$$\tau^*(h_z(h_0)) < T^*$$

2^{nd}- step: h_0 is fixed, using a control pbe and the continuous dependence of h w.r.t. h_0 and z, $\exists V_1$ open in $C([0,T^*), V_\beta)$ $\forall z \in V_1$, $h_z(h_0, T^*) \in \mathcal{H}$

Then

$$\mathbb{P}(\tau^*(h_z(h_0)) < 2T^*) \geq \mathbb{P}(h_z(h_0, T^*) \in \mathcal{H}) \geq \mathbb{P}(z|_{(0,T^*)} \in V_1)$$

$$\mathbb{P}(\tau^*(h_z(h_0)) < 2T^* \mid h_z(h_0, T^*) \in \mathcal{H})$$

$$\geq \mathbb{P}(z|_{(0,T^*)} \in \mathcal{Z})$$