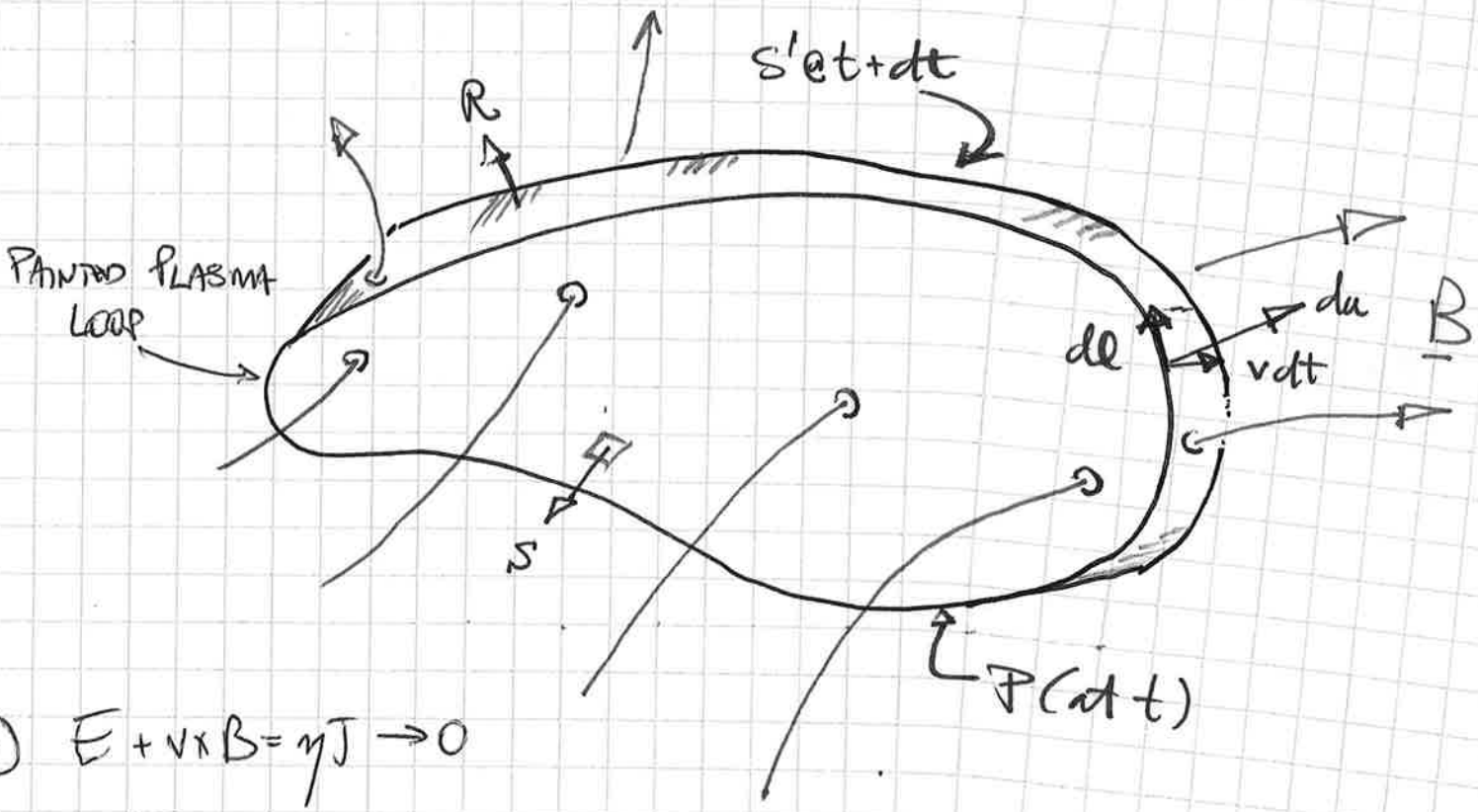
ALFVÉN THEOREM GEOMETRY



① $\underline{E} + \underline{v} \times \underline{B} = \eta \underline{J} \to 0$

$\Rightarrow \underline{E} = -\underline{v} \times \underline{B}$

$\Rightarrow \boxed{\frac{\partial \underline{B}}{\partial t} = \nabla \times (\underline{v} \times \underline{B})}$

② $\nabla \cdot \underline{B} = 0 \rightarrow \int_{SURF\,S'} \underline{B} \cdot d\underline{a} = 0$

③ WE WANT $d\Phi = \int_{S'} \underline{B}(t+dt) \cdot d\underline{a} - \int_{S} \underline{B}(t) \cdot d\underline{a}$

FROM ② $\int_{S'} \underline{B}(t+dt) \cdot \underbrace{d\underline{a}}_{\uparrow \text{OUT}} + \int_{R} \underline{B}(t+dt) \cdot \underbrace{d\underline{a}}_{\uparrow \text{OUT}} + \int_{S'} \underline{B}(t+dt) \cdot d\underline{a} = 0$