

let  $L = -\frac{m}{2}\eta_{ab}\dot{x}^a\dot{x}^b + qA_a\dot{x}^a$ .  
Now

$$\frac{\partial L}{\partial x^a} = q(\partial_a A_b)\dot{x}^b$$

$$\frac{\partial L}{\partial \dot{x}^a} = -m\eta_{ab}\dot{x}^b + qA_b$$

$$\frac{\partial}{\partial \lambda} \frac{\partial L}{\partial \dot{x}^a} = -m\eta_{ab}\dot{x}^b$$

All this implies

$$\dot{x}_b = \frac{q}{m}(\partial_a A_b)\dot{x}^b$$