$$c^2 \cdot \Delta \vec{u} = \frac{\partial \vec{u}}{\partial t^2}$$

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curl of E

$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t}$$

take curl

$$\vec{\nabla} \times (\vec{\nabla} \times \vec{E}) = \vec{\nabla} \times (-\partial_t B)$$

$$\iff \vec{\nabla} \cdot (\underbrace{\vec{\nabla} \cdot \vec{E}}_{0}) - \vec{\nabla}^2 \cdot E = ''$$

$$\iff -\vec{\nabla}^2 \vec{E} = -\partial_t \cdot (\vec{\nabla} \times \vec{B})$$

$$\iff \cancel{-}\vec{\nabla}^2 E = \cancel{-}\partial_t \cdot (\mu_0 \varepsilon_0 \partial_t \vec{E})$$

$$\iff \vec{\nabla}^2 \vec{E} = \mu_0 \varepsilon_0 \partial_t^2 \vec{E} \quad \to \quad c = \sqrt{\frac{1}{\mu_0 \varepsilon_0}}$$

$$\iff c^2 \vec{\nabla}^2 \vec{E} = \partial_t^2 \vec{E}$$

curl $\vec{B}$:

$$\vec{\nabla} \times \vec{B} = \mu_0 \varepsilon_0 \partial_t \vec{E}$$

$$\iff \vec{\nabla} \times (\vec{\nabla} \times \vec{B}) = \mu_0 \varepsilon_0 \partial_t \vec{\nabla} \times \vec{E}$$

$$\iff \vec{\nabla} \cdot (\vec{\nabla} \cdot \vec{B}) - \vec{\nabla}^2 \vec{B} = -\partial_t^2 \mu_0 \varepsilon_0 \vec{B}$$

$$\iff -\vec{\nabla}^2 \vec{B} = -\partial_t^2 \mu_0 \varepsilon_0 \vec{B}$$

$$\iff \cancel{-}c^2 \vec{\nabla}^2 \vec{B} = \cancel{-}\partial_t^2 \vec{B}$$