

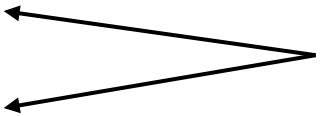
**PHYS313 Lecture 1**

**Fall 2026**

**Prof. Anlage**

## Maxwell's Equations (differential form)

$$\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$$

vectors  scalars 

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$$\nabla \cdot \mathbf{B} = 0$$

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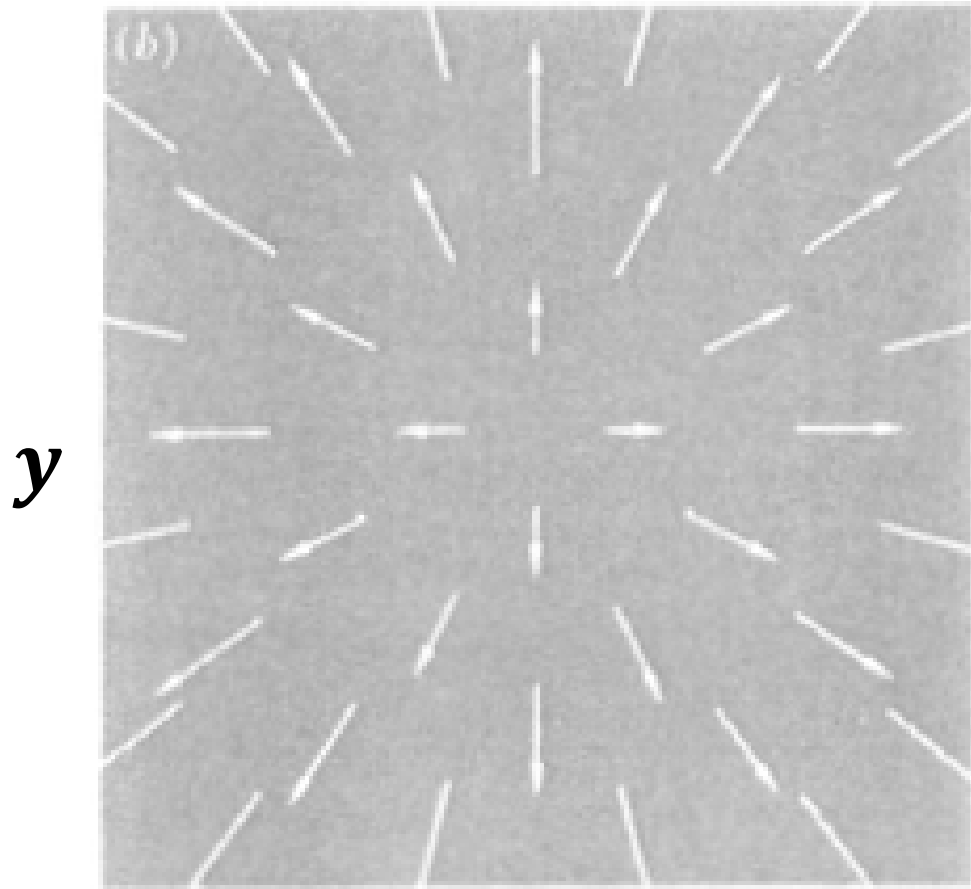
$$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$$

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$$\nabla \times \mathbf{B} = \mu_0 \mathbf{J} + \mu_0 \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}$$

# Vector Fields with Non-Zero Divergence

Consider these vector fields  $\vec{F}(x, y)$



$y$

$x$



$y$

$x$

# Vector Fields with Non-Zero Curl

Consider these vector fields  $\vec{F}(x, y)$

