Long Title

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Outline

Frame Title

- Example
- of a
- List

1. Example
2. of a
3. Numbered List
4. in a Box

Frame 2 Title

Definition

An word has a *meaning*.

$$\min_{d \in D} \left\| d^d \right\| .$$

Maxwell's Equations

$$\frac{\partial \mathbf{D}}{\partial t} + \mathbf{J} = \nabla \times \mathbf{H} \qquad \text{(Ampere)}$$

$$\frac{\partial \mathbf{B}}{\partial t} = -\nabla \times \mathbf{E} \qquad \text{(Faraday)}$$

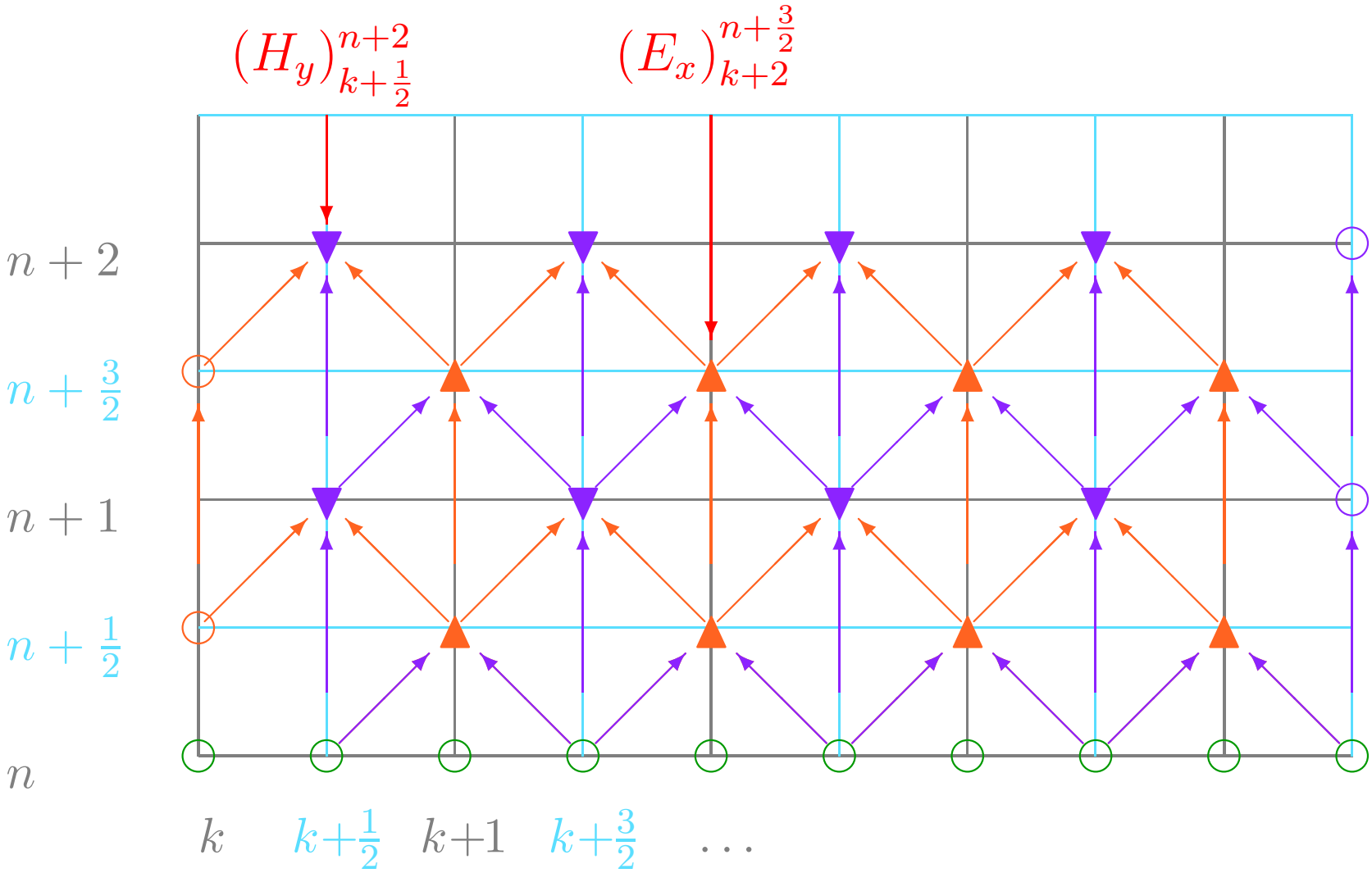
$$\nabla \cdot \mathbf{D} = \rho \qquad \text{(Poisson)}$$

$$\nabla \cdot \mathbf{B} = 0 \qquad \text{(Gauss)}$$

$\mathbf{E} =$	Electric field vector	$\mathbf{D} =$	Electric displacement
$\mathbf{H} =$	Magnetic field vector	$\mathbf{B} =$	Magnetic flux density
$\rho =$	Electric charge density	$\mathbf{J} =$	Current density

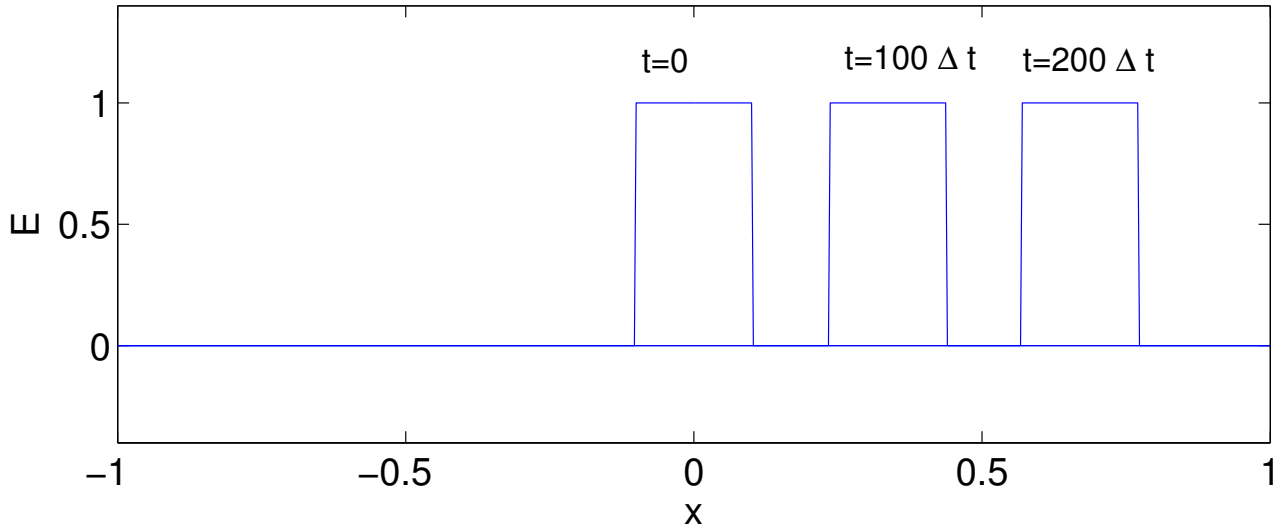
These are often referred to as the curl equations.

The FDTD or Yee grid in 1D

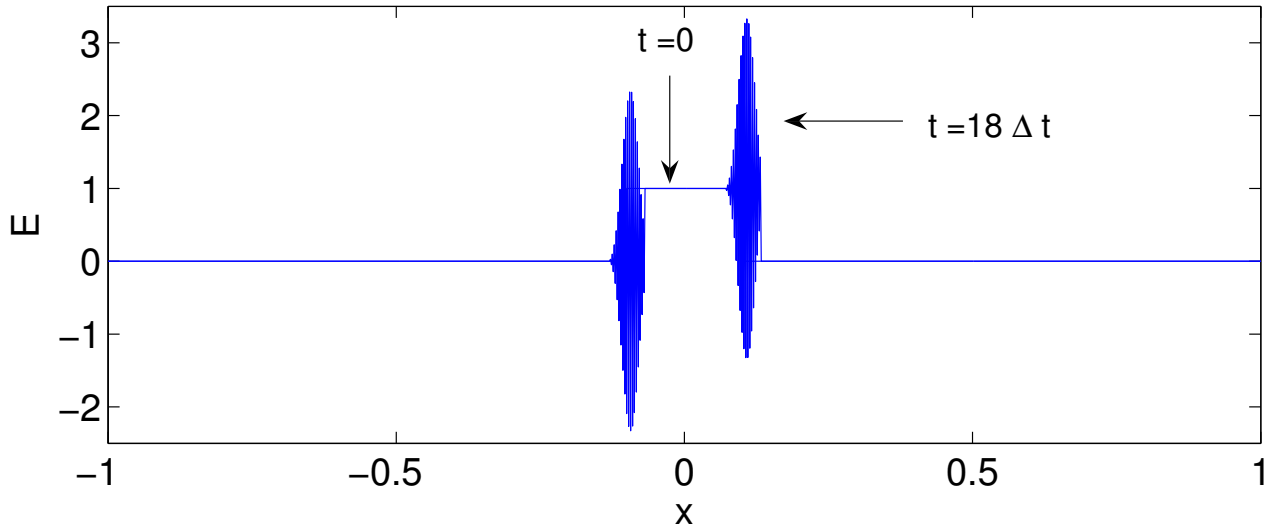


Numerical Stability: A Square Wave

- Case $c\Delta t = \Delta x$



- Case $c\Delta t > \Delta x$



Gap Detection

Dielectric slab with gap in front of metallic backing

Note the absorbing boundary conditions on the left.

Open Questions

- How to write a talk
  - How to write a good talk
  - How to write it fast

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  - How to write a good talk
  - How to write it fast
- How to give a good talk


E Abenius and B Strand.
Solving inverse electromagnetic problems using FDTD and gradient-based minimization.
International Journal for Numerical Methods in Engineering, 68(6):650–673, 2006.


DW Winters, EJ Bond, BD Van Veen, and SC Hagness.
Estimation of the Frequency-Dependent Average Dielectric Properties of Breast Tissue Using a Time-Domain Inverse Scattering Technique.
Antennas and Propagation, IEEE Transactions on, 54(11 Part 2):3517–3528, 2006.


D. Xiu and G. E. Karniadakis.
The Wiener-Askey polynomial chaos for stochastic differential equations.
SIAM Journal on Scientific Computing, 24(2):619–644, 2003.