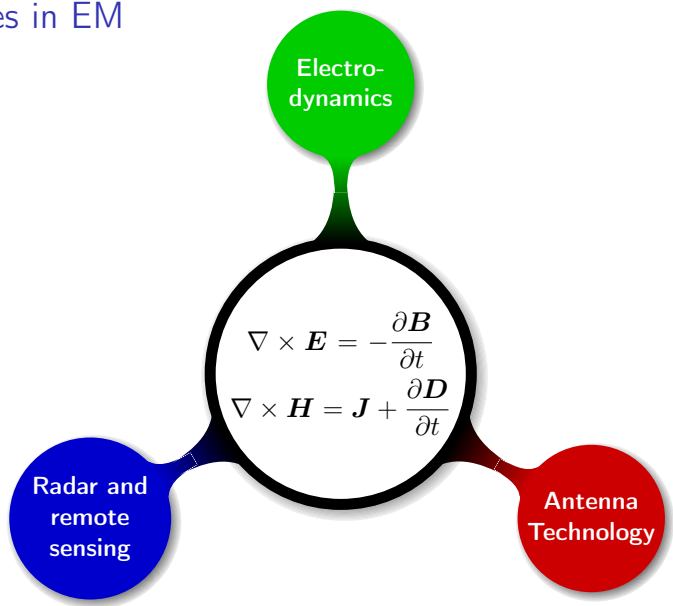
# Advanced courses in EM



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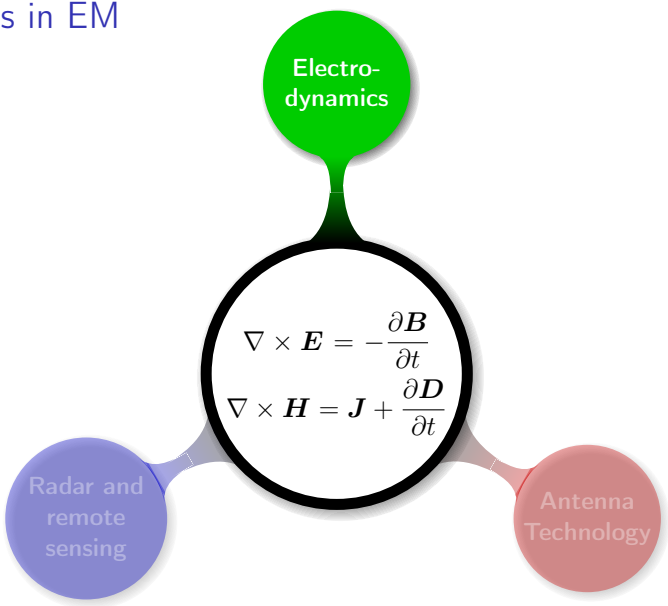
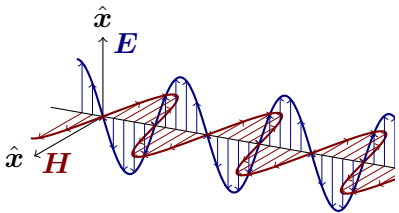


# ETEN80 Electrodynamics, 7.5 credits, vt2

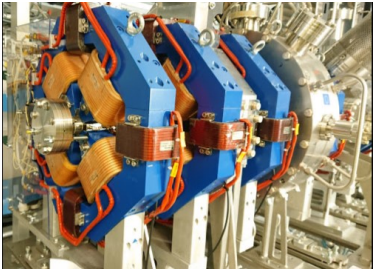



$$\nabla \times \boldsymbol{E} = -\frac{\partial \boldsymbol{B}}{\partial t}$$

$$\nabla \times \boldsymbol{H} = \frac{\partial \boldsymbol{D}}{\partial t} + \boldsymbol{J}$$

$$\nabla \cdot \boldsymbol{D} = \rho$$

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



**Learn about**

- ❒ Maxwell's equations
- ❒ Moving particles and fields
- ❒ Guided waves
- ❒ Special relativity

**Course structure**

- ❒ Lectures and exercises
- ❒ Simulations (comsol)
- ❒ Griffiths 9-12
- ❒ Assignments

**Applications**

- ❒ Almost Everything
- ❒ Particle accelerators
- ❒ GPS, Doppler
- ❒ Optics, photonics

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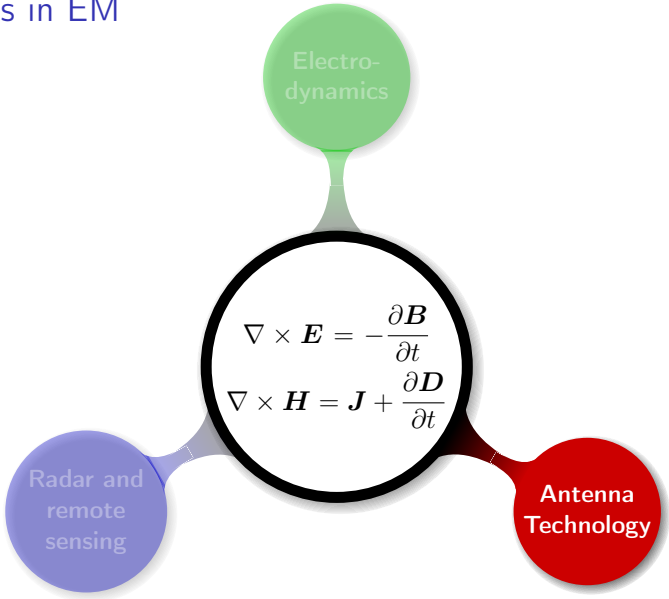
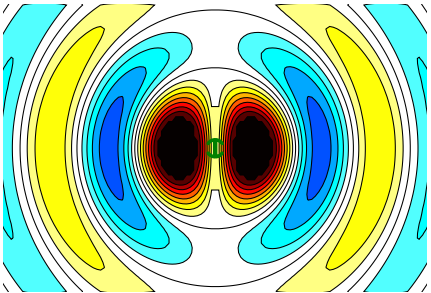


# ETEN10 Antenna Technology, 7.5 credits, ht2



**Learn about**

- ❒ Radiating EM fields
- ❒ Antenna theory
- ❒ Arrays and beam forming
- ❒ Measurement techniques

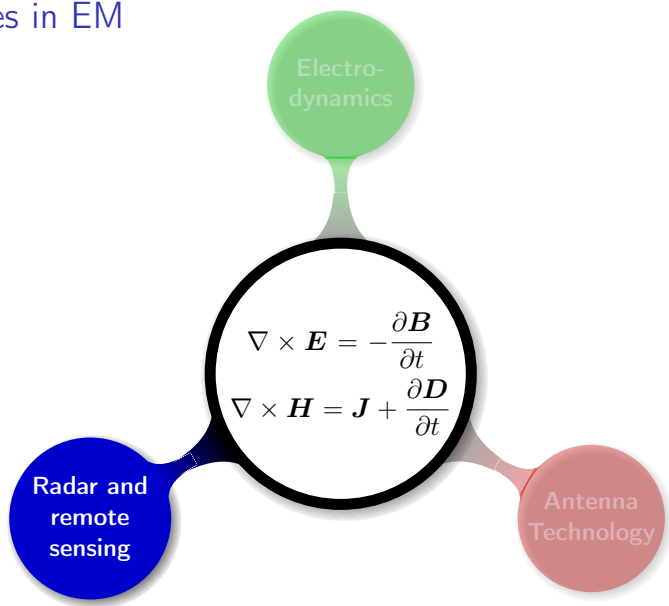
**Design, build, and test**

- ❒ Design your antenna
- ❒ Simulate and improve
- ❒ Build and measure
- ❒ Test

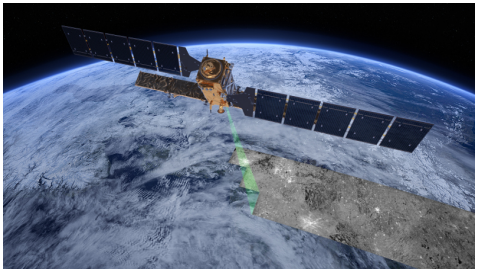
**Applications**

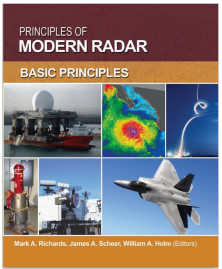
- ❒ 5G, 6G, satellite
- ❒ RFID and IoT
- ❒ Radio astronomy
- ❒ Optics, photonics

# Advanced courses in EM



# EITN90 Radar and remote sensing, 7.5 hp, vt1






## Learn about

- ❒ Wave propagation
- ❒ Scattering theory
- ❒ Radar system blocks
- ❒ Detection algorithms
- ❒ Stealth technology

## Course structure

- ❒ Theoretical lectures and practical workshops
- ❒ Labs using simple and advanced radars
- ❒ Examination by designing a specific radar system

## Applications

- ❒ Car radar
- ❒ Weather monitoring
- ❒ Air traffic control
- ❒ Remote sensing of planets
- ❒ Gesture recognition