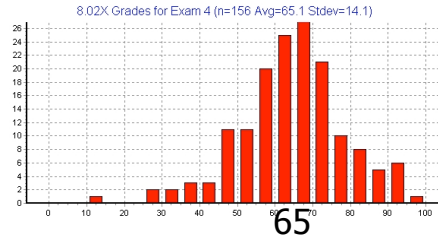
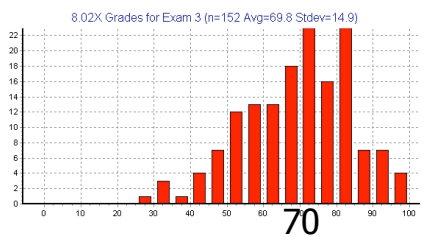
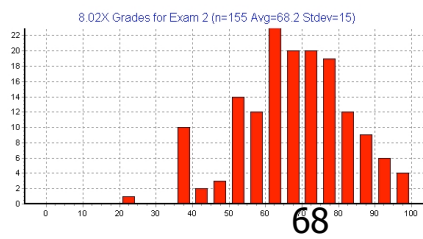
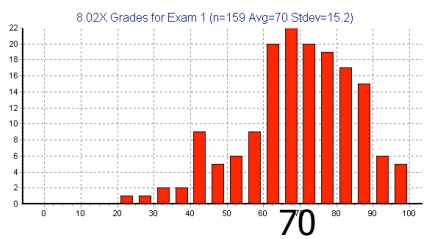


Quiz 1 2004 Quiz Grades Quiz 2

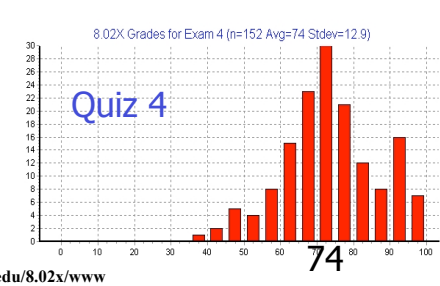
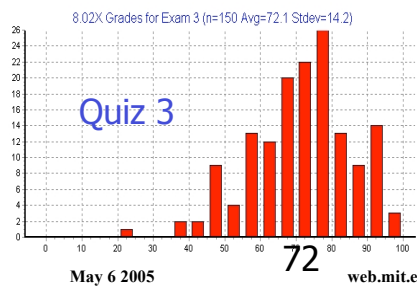
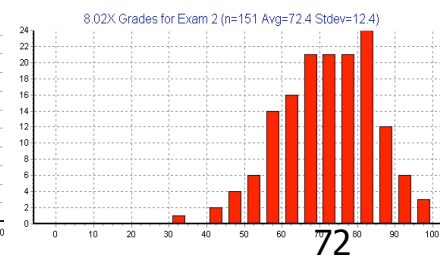
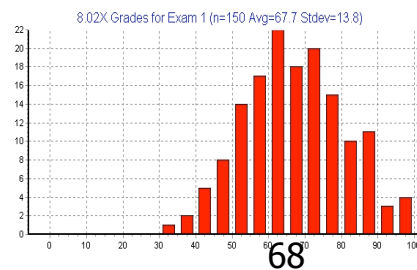


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Quiz 4

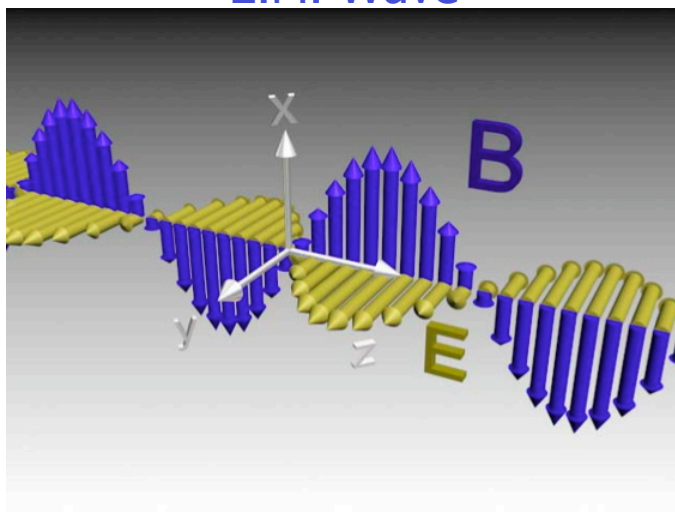
Quiz 1 2005 Quizzes Quiz 2



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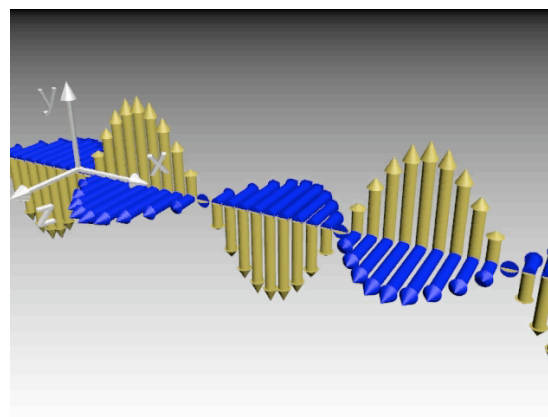
E.M. Wave



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E.M. Wave



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Experiment MW

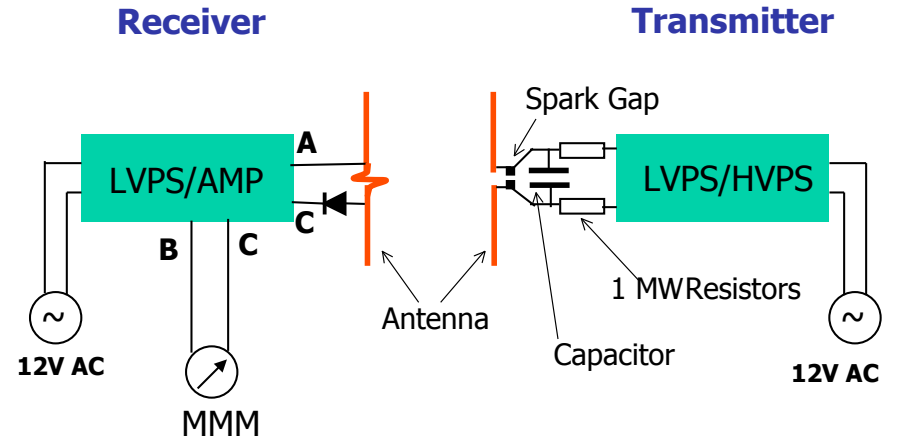
MW (Micro-Wave):

Generate and detect **Electromagnetic Waves**

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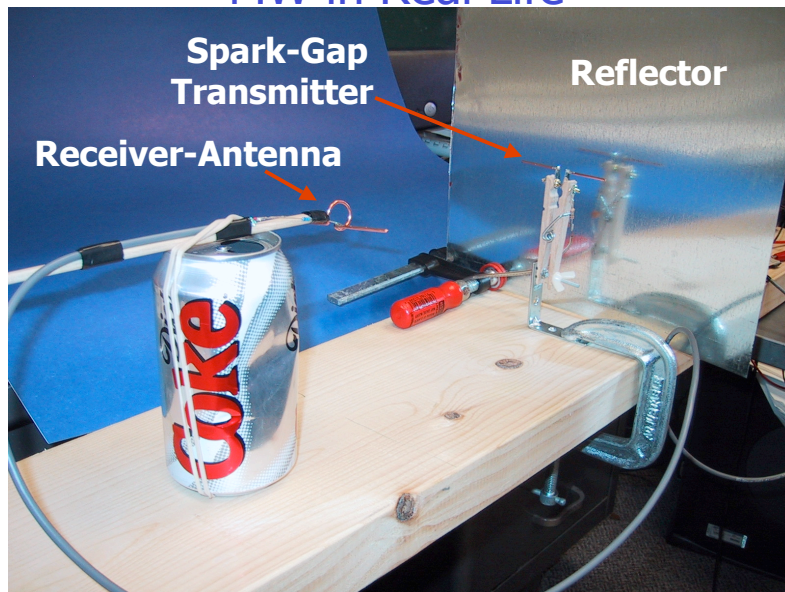
MW Block Diagram



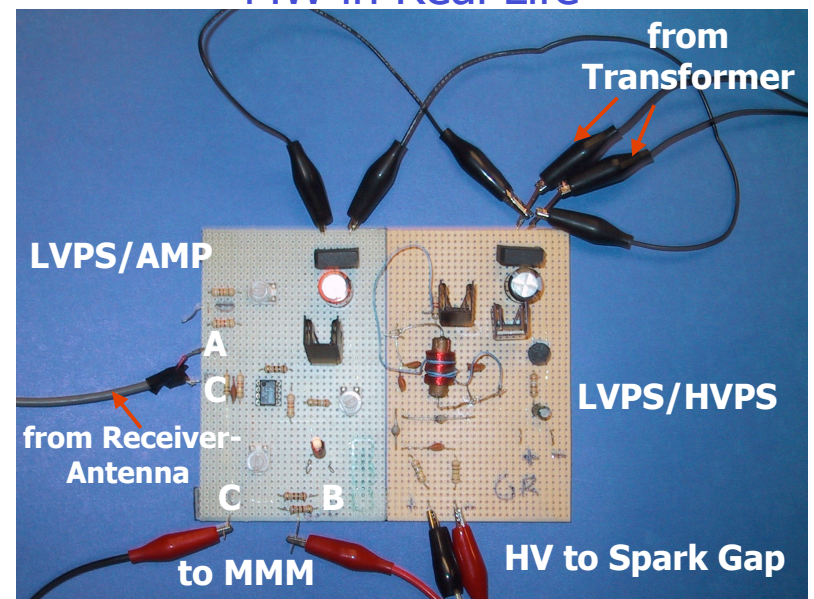
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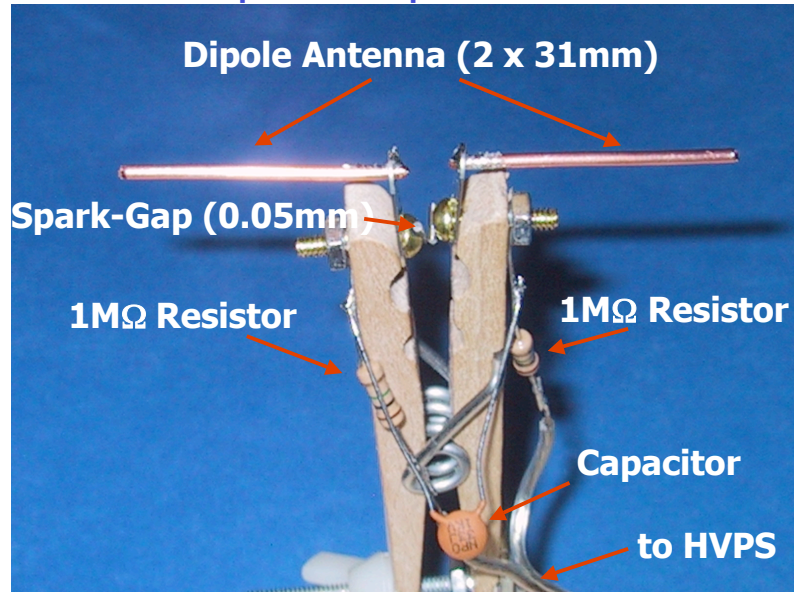
MW in Real Life



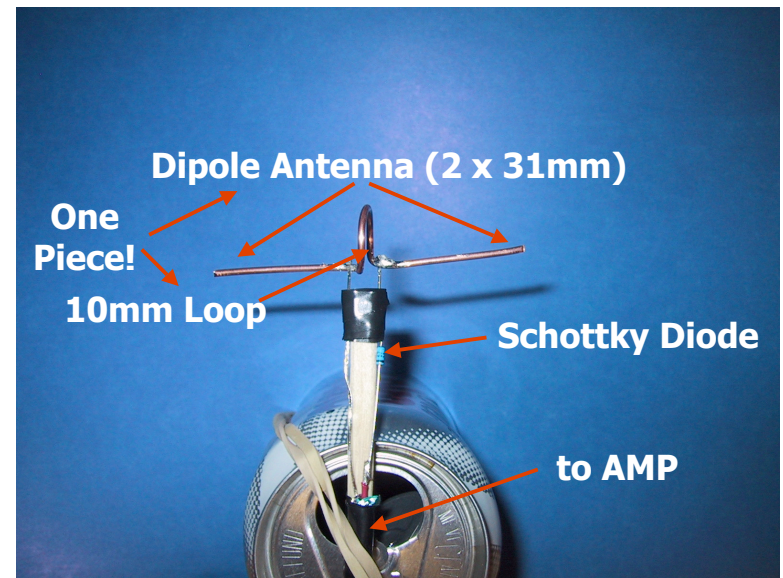
MW in Real Life



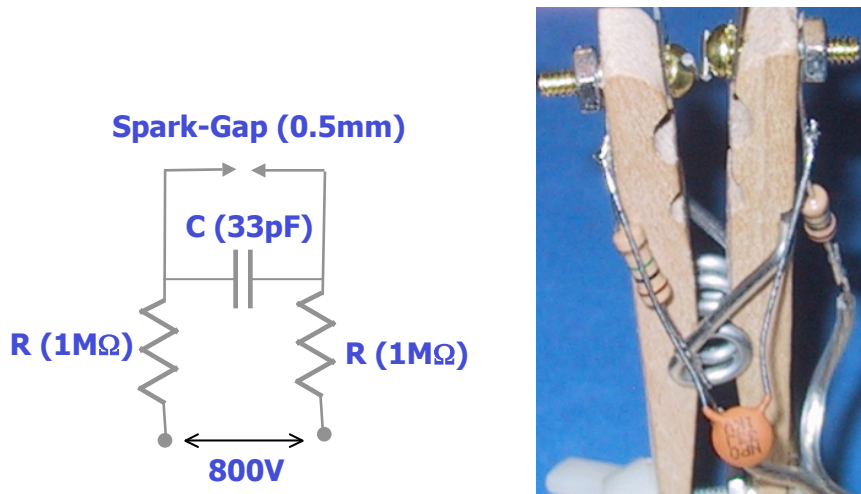
Spark-Gap Emitter



Receiving Antenna



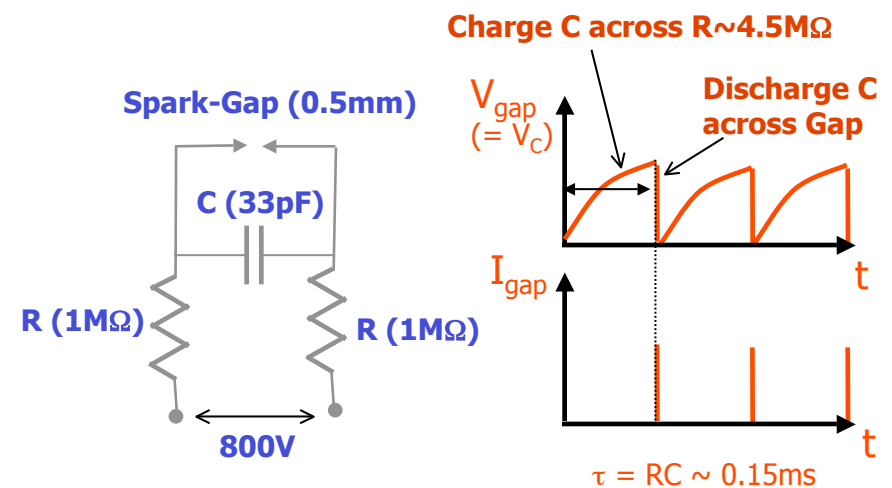
Making waves



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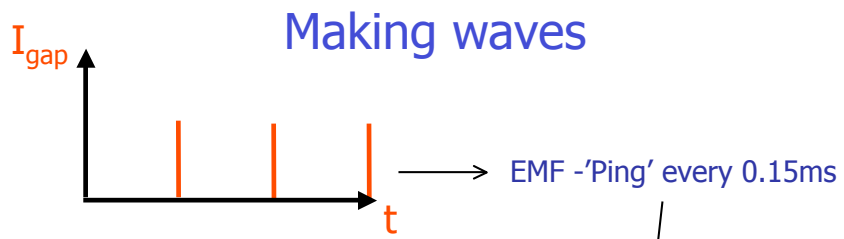
web.mit.edu/8.02x/www

Making waves



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web.mit.edu/8.02x/www



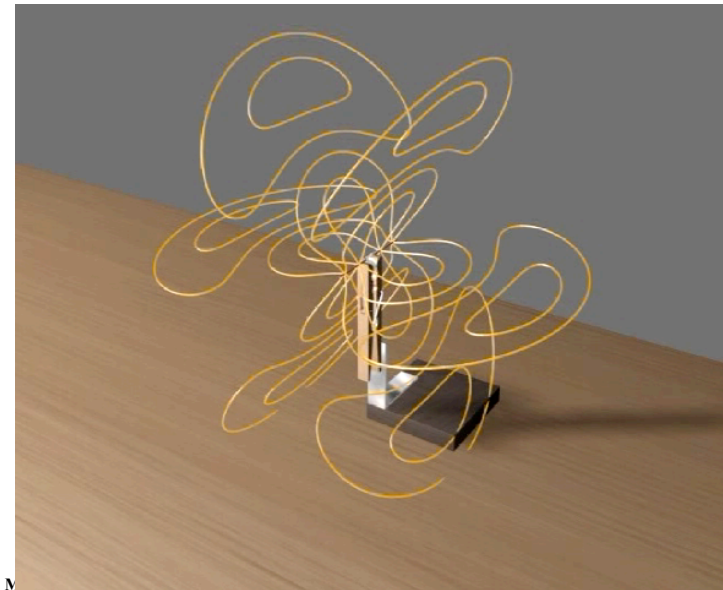
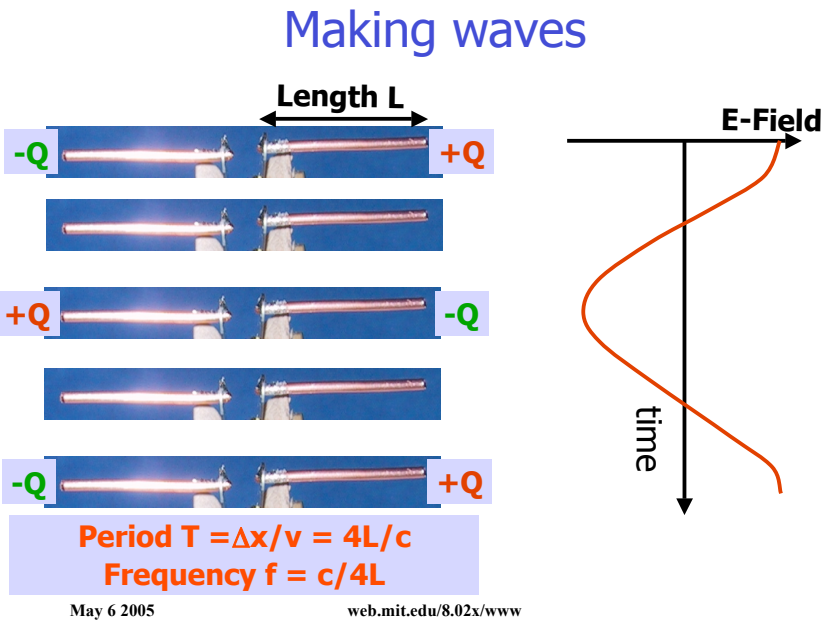
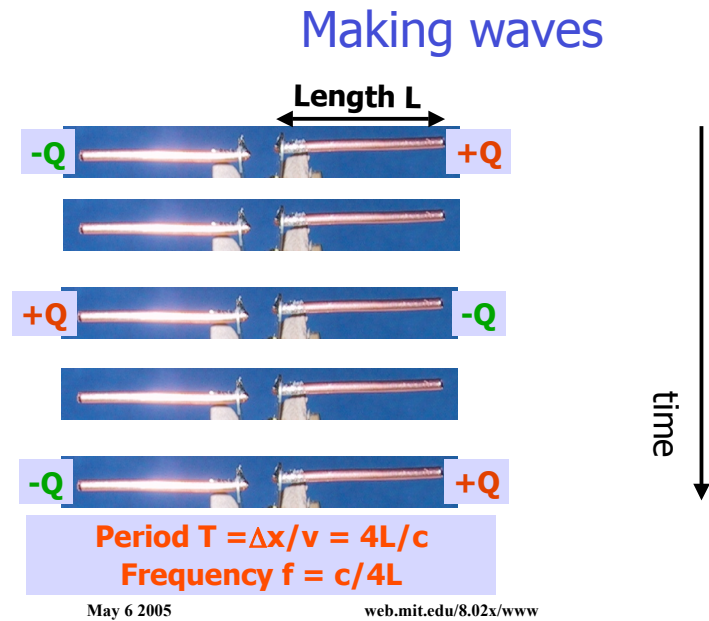
Antenna has 'L' and 'C' (and 'R'):
Damped Oscillator

Energy

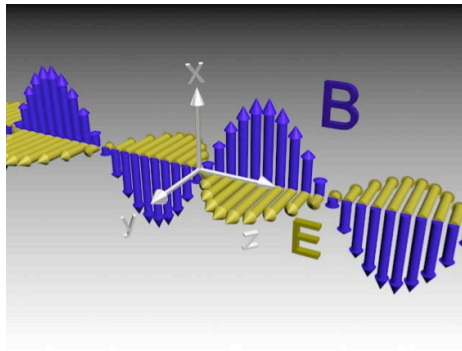


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E.M. Wave



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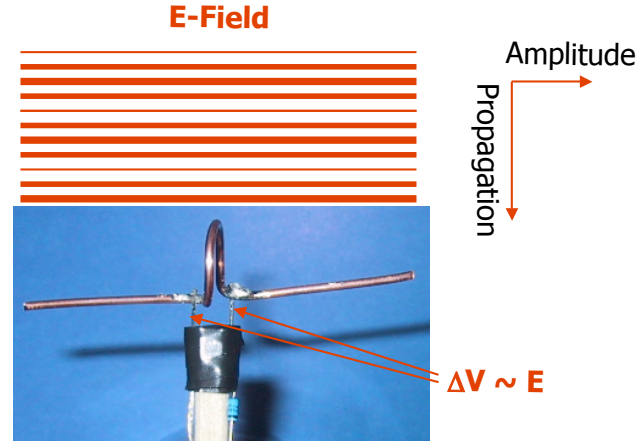
Antenna determines

- Frequency: $f = c/4L$
- Polarization: $E \parallel \text{Antenna}$

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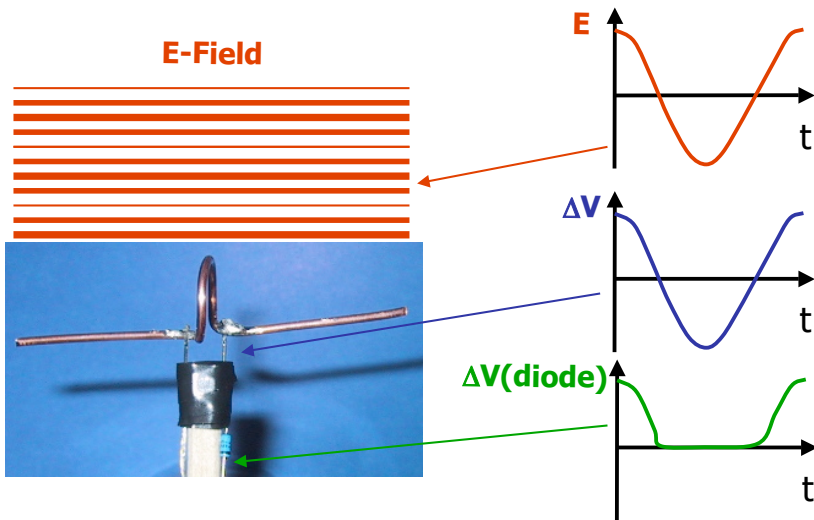
Receiver



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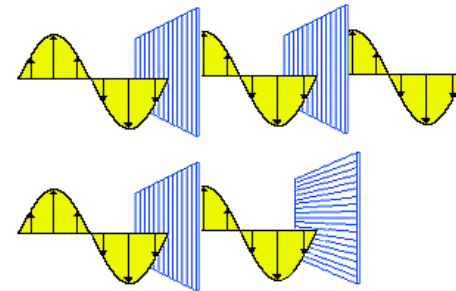
Receiver



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Polarization



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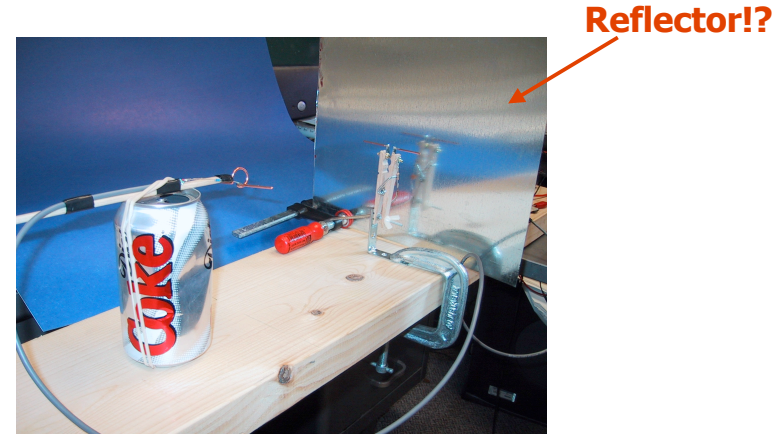
Polarization

- Polarization:
 - Oscillation of fields has well defined direction
- Polarization only possible for transverse waves
- In general, light (sun, lightbulb) is unpolarized
 - Superposition of waves with many different orientations
- Can be polarized using e.g. polarizer foils

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Interference



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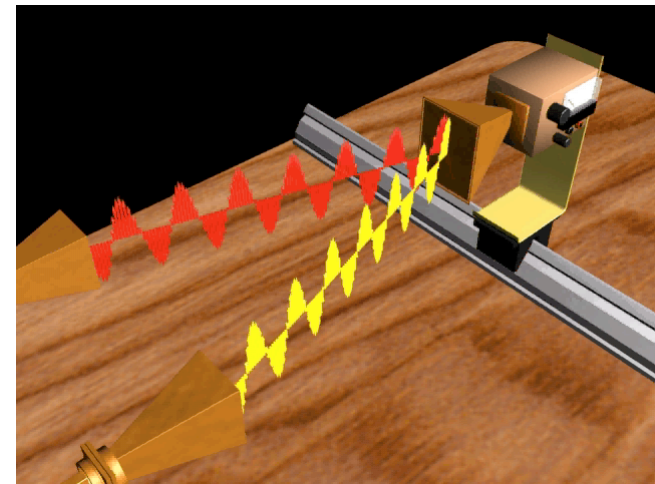
Superposition of waves



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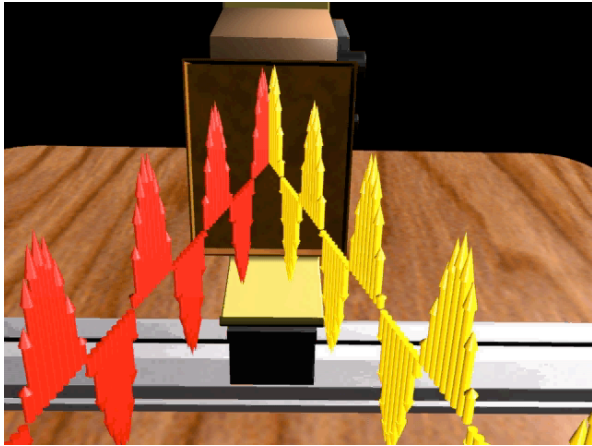
Microwave interference



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web.mit.edu/8.02x/www

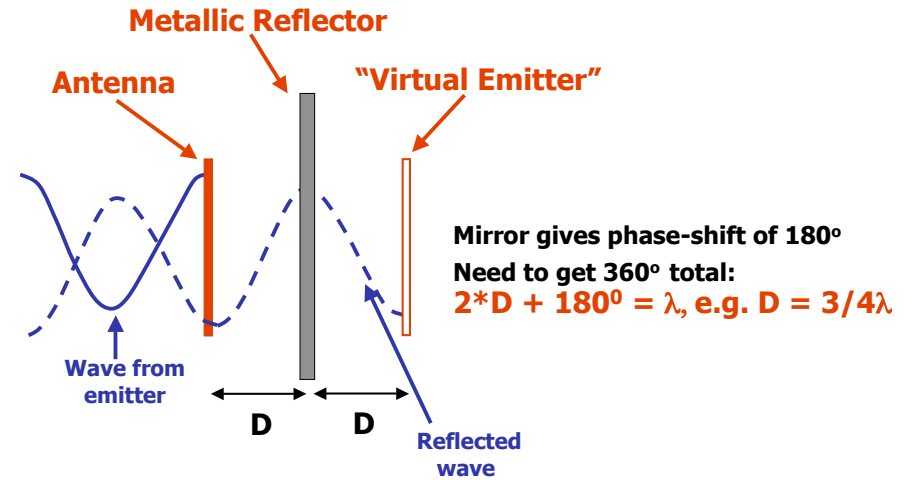
Microwave Interference



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Interference



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Experiment MW

Your experiment shows:

Wave Nature of E.M. radiation

Transverse polarization

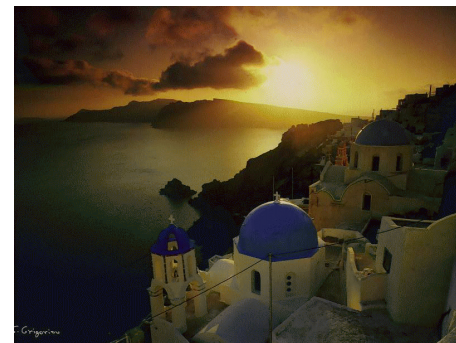
Speed $c = \lambda * f$

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Monday: The Nature of Light

Why is the sky blue during day...



... and red at sunset?

Santorini, Greece

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