

**Introduction & Preliminaries  
EE 252, Spring, 2005**

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**March 29, 2005**

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**EE 252 *Antennas* Spring, 2001**

**Find Hand Outs:**

- General Information
- Syllabus
- Bibliography

**Blue Cards:**

- Indicate your year (Senior, 1<sup>st</sup> year grad, etc.)
- Indicate number of quarters of electromagnetics
- Include address for e-mail & phone number

**Grading:**

- 35% Homework
- 25% Midterm
- 40% Project

Midterm tentatively week of May 2,  
“take-out/bring-back” format

Project due June 3, at 12 noon.

TV students please note these dates. Midterm in class if you are in Bay Area (less than 45 minute drive, say).

**Show & Tell**

- Daily, MWF
- Don't be shy!

**Possible Tours**

- Big Dish
- Local antenna range
- San Bruno Mountain

**Interesting Sites**

- Many on campus
- Fry's parking lot
- PAO, Baylands, Montebello Ridge, etc.
- Municipal buildings
- Mt. Diablo

### **Antenna Farms—Large HF and Satellite**

(all on the coast)

- 1–2 mi N. of Bolinas
- S. of Half Moon Bay
- Inverness & Point Reyes
- Point Arena

FCC monitoring station 2 mi. N. of 580, 5 E. of Livermore.

### **Fundamental Property of Antennas**

- Circuit terminal pair or *port* has well-defined  $V, I$  relationship, or *immitance*
- EM waves described purely in terms of field quantities
- Antenna structure *launches* and *receives* waves by coupling the fields to currents and voltages at the terminals
- Antenna provides an efficient, engineered transition between terminal pair or port and EM wave

### **Fundamental Property...**

Antennas differ from ordinary electric circuits in that *they radiate* by design when power is applied to the terminals.

By reciprocity currents and voltages are excited on the structure in the presence of an externally generated field.

Basic forms were known very early (Hertzian dipoles)

### **Requirements for Use and Design**

1. Description of power transfer between circuit and space; the effect of an external circuit on the antenna and vice versa?
2. Distribution of radiated energy or power flow in space?
3. Response or sensitivity upon reception of energy?
4. Process of wave/circuit transition and how to control it?