



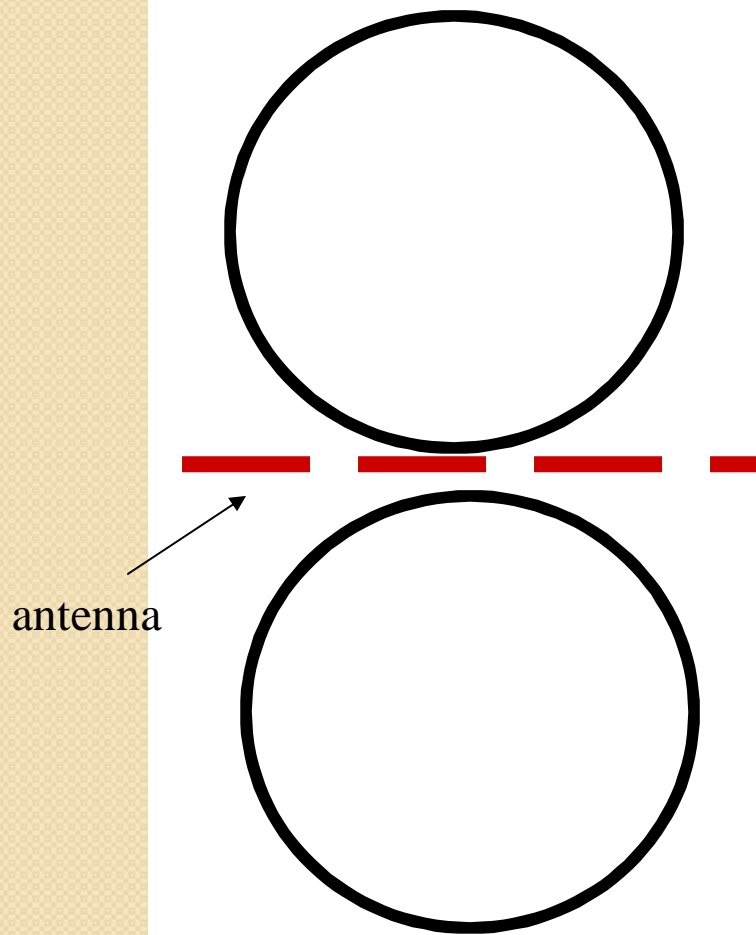
ANTENNAS , WAVE PROPAGATION &TV ENGG



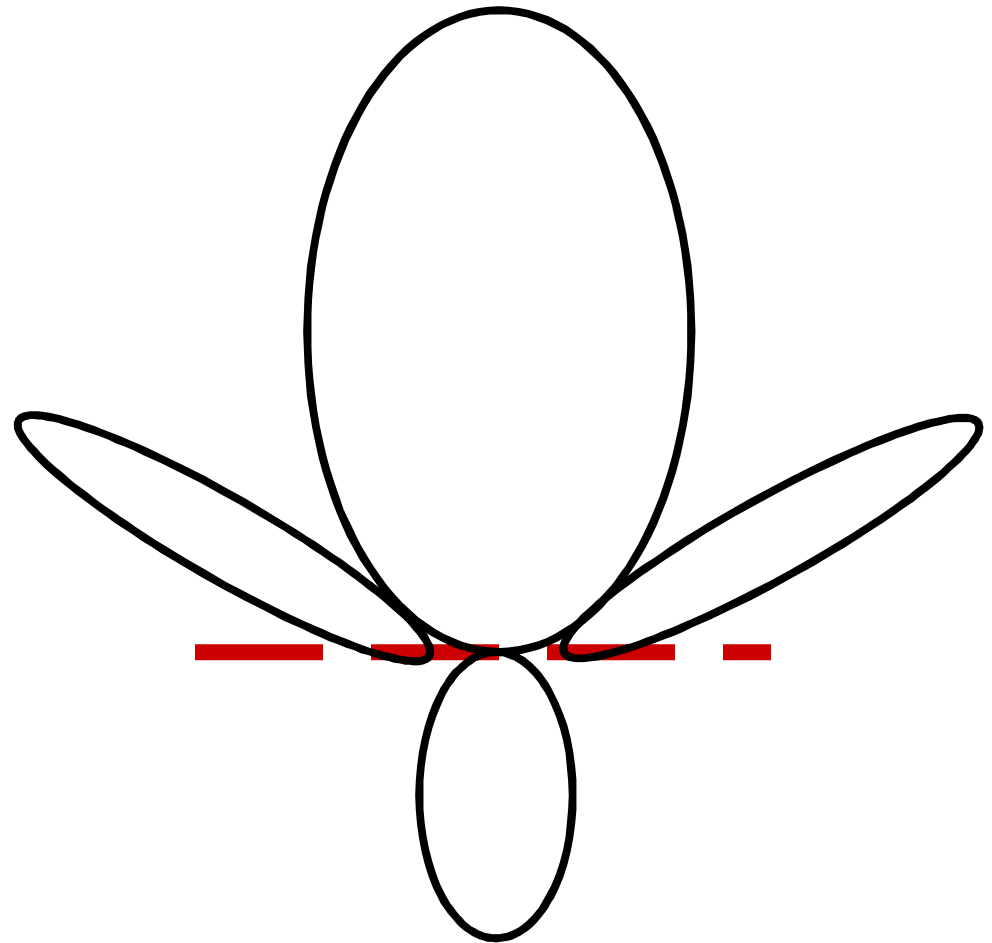
Topics to be covered

- Radiated directed signal

Radiated Directed Signal



$\lambda/2$ dipole radiated signal without reflector



$\lambda/2$ dipole radiated signal with reflector

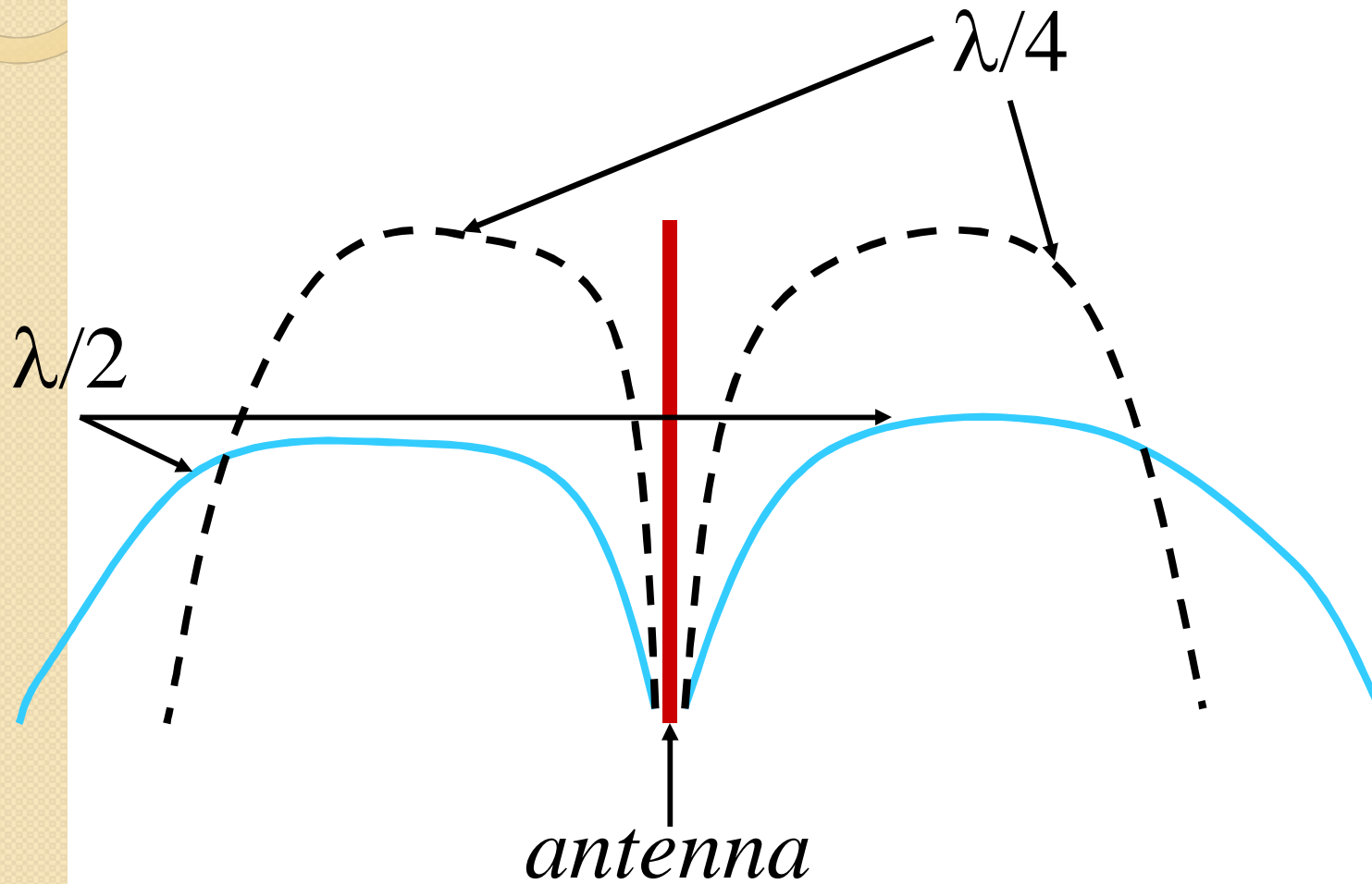
Polarization

- Polarization is the direction of the electric field and is the same as the physical attitude of the antenna
 - **A vertical antenna will transmit a vertically polarized wave**
- The receive and transmit antennas need to possess the same polarization

Vertical (Marconi) Antenna

- *Vertical Antennas* are used for frequencies under 2 MHz.
- It uses a conducting path to ground that acts as $\frac{1}{4}$ wavelength portion the antenna above the ground.
- The above ground structure represents a $\lambda/4$ wavelength

Radiation Pattern for Vertical Antennas



Vertical (Marconi) Antenna – cont'd

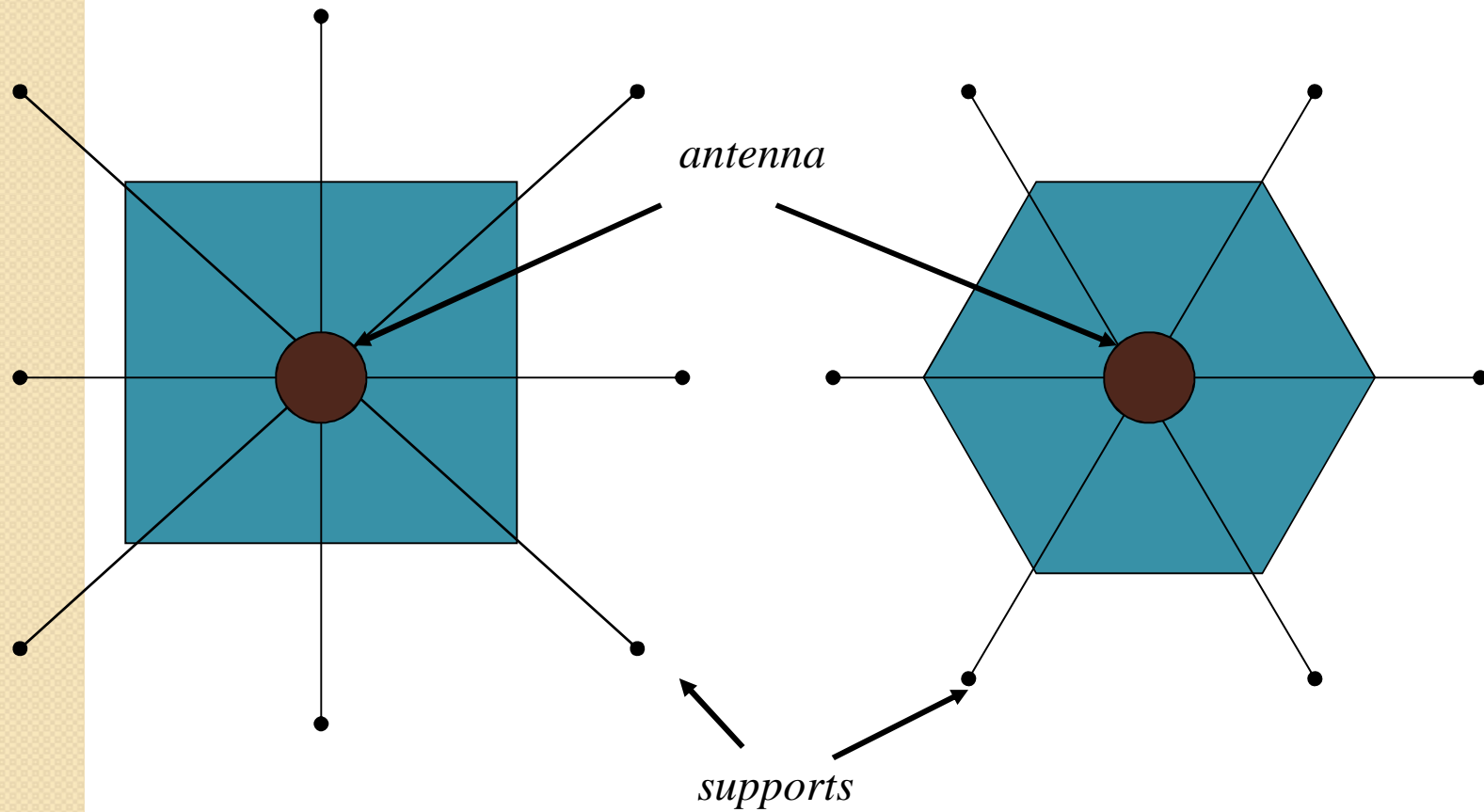
- Poor grounding conditions of the earth/soil surrounding the antenna can result in serious signal attenuation. This problem is alleviated by installing a *counterpoise*

Counterpoise

- *Counterpoise* is a grounding grid established where the earth grounding cannot satisfy electrical requirements for circuit completion. It is designed to be non-resonant at the operating frequency

Counterpoise-cont'd

$$radius = \frac{1}{4} \lambda$$



Directional Antenna

