Introduction to Antenna theory, simulation, design, and practice.


Week 5 topics: Signal Processing Antennas, guest lecture by Nasr Alkhafaji.


Active cloaking and zero reflection techniques.

Introduction to the basic principles of reflector antennas.

A little Radio Science: Propagation features at 72 Hz, 60 kHz, 1 MHz, 10 MHz, 100 MHz, 1 GHz, 10 GHz, 100 GHz, 1 THz...

Discussion of the outdoor test at 1296 MHz. What did we learn?

The importance of researchers taking data in the field.

System dynamic range--the difference between wireless and wired systems.

For example:

Digital ones and zeros are typically different by volts. Logic noise margins are many hundreds of mV. The strongest signal in a digital logic system is only 20 dB stronger than a signal buried in the noise.

Radio signals may also be volts, but noise floor may be 10 nV, and 30 nV signal may be 10 dB above the noise. If strongest input signal a radio can handle is 1 volt and noise floor is 10 nV, that’s 160 dB dynamic range.