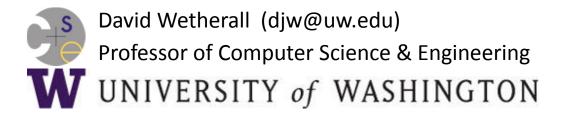
# **Computer Networks**

Media (Wires, etc.) (§2.2, 2.3)

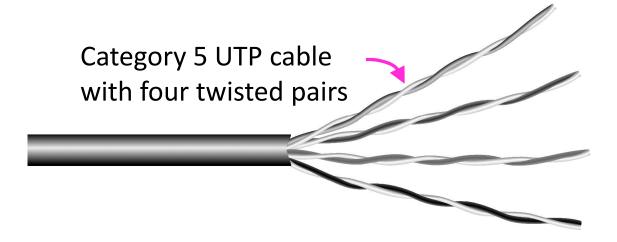


# Types of Media

- Media propagate <u>signals</u> that carry <u>bits</u> of information
- We'll look at some common types:
  - Wires »
  - Fiber (fiber optic cables) »
  - Wireless »

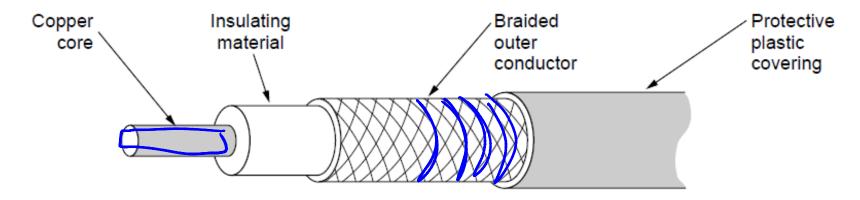
## Wires – Twisted Pair

- Very common; used in LANs and telephone lines
  - Twists reduce radiated signal



## Wires - Coaxial Cable

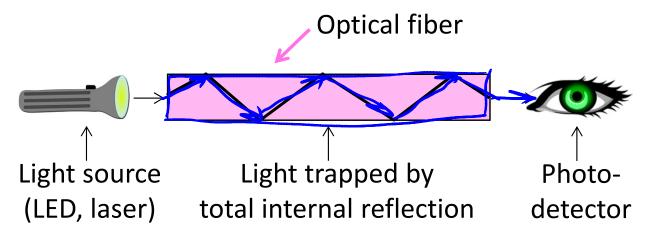
Also common. Better shielding for better performance



Other kinds of wires too: e.g., electrical power (§2.2.4)

## Fiber

- Long, thin, pure strands of glass
  - Enormous bandwidth (high speed) over long distances

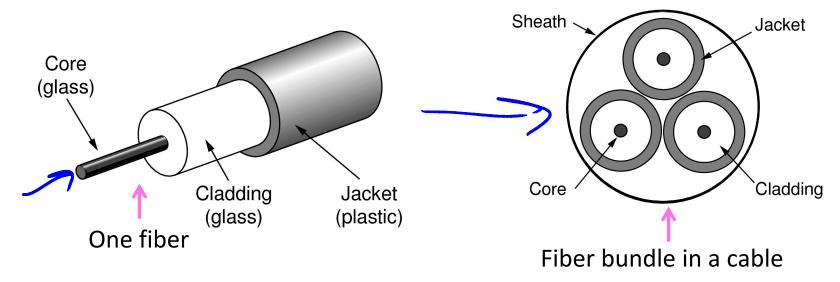


**Computer Networks** 

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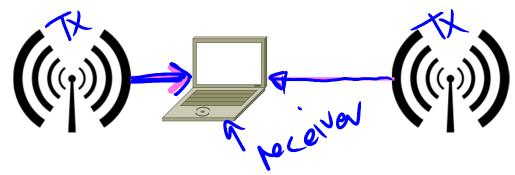
# Fiber (2)

 Two varieties: multi-mode (shorter links, cheaper) and single-mode (up to ~100 km)



## Wireless

- Sender radiates signal over a region
  - In many directions, unlike a wire, to potentially many receivers
  - Nearby signals (same freq.) <u>interfere</u> at a receiver; need to coordinate use



### **UNITED**

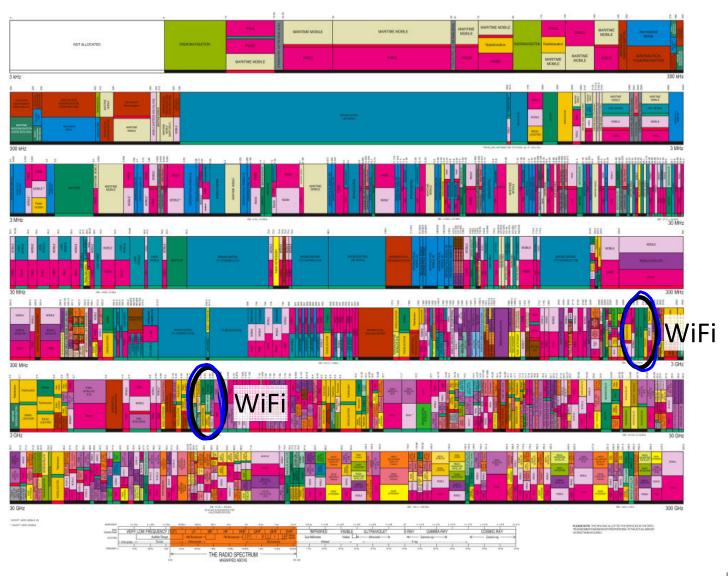
### **STATES**

### **FREQUENCY**

### **ALLOCATIONS**

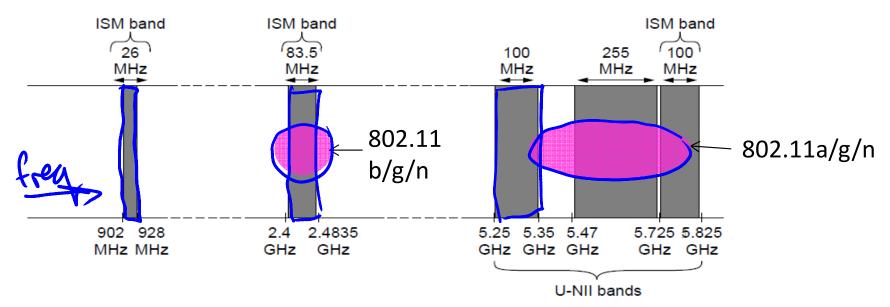
#### THE RADIO SPECTRUM





# Wireless (2)

Microwave, e.g., 3G, and unlicensed (ISM) frequencies,
e.g., WiFi, are widely used for computer networking



# **END**

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