

## Spread-Spectrum

**Exercise 1:** Consider a 30 kHz signal. What is the SIR if a jammer is transmitting on the same frequency with equal received power? If the jammer is on a different frequency? What is the SIR if DSSS with a spreading factor of 100 is used? Does the SIR depend on the jammer's frequency?

$$\text{SIR (same freq. no DSSS)}: S=I, \text{ SIR} = \frac{S}{I} = 1 = 0 \text{ dB}$$

$$\text{SIR (diff. " " " )}: I=0, \text{ SIR} = \infty = \infty \text{ dB}$$

$$\text{SIR (DSSS, any jammer freq.)}: I \approx \frac{S}{100}, \text{ SIR} = 100 = 20 \text{ dB}$$

↑  
No.

**Exercise 2:** Why do all the downlink codes have the same delay?

Why do different user's uplink signals have different delays?

downlink: all codes on same signal (& paths)

uplink: codes from different users  
on different signals (& paths)

**Exercise 3:** Is BT FFH or SFH?

$$\text{Symbol rate} \approx 1 \text{ Mb/s} \gg \text{hop rate} \approx 1600 \text{ Hz}$$

→ SFH