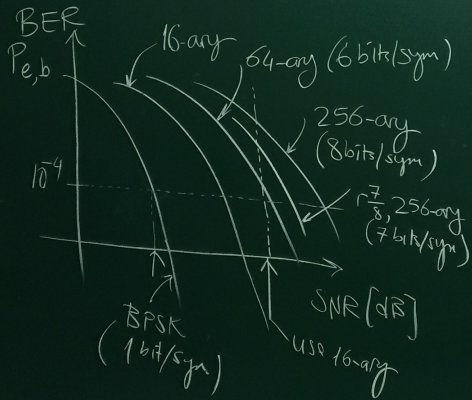
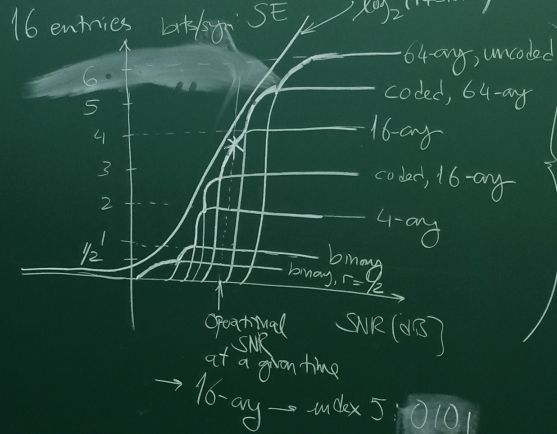


Nov 10, 2016

linear
 $\log_2(1+SNR)$ bits/sym ... Shannon Limit
 non-constructive existence theorem



AMC
 LTE look up table



Quiz 3
 Thu, Nov 17
 Final
 Mon, Dec 12
 9am - 12 noon

AMC scheme
 adaptive

more powerful channel codes -> AMC closer to Shannon limit
 * turbo codes, 1993
 * LDPC codes, late 1990s
 * polar codes, 2008

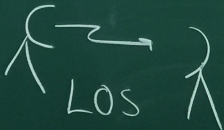
how high AMC_{max} can be?

LTE: 64-ary

LTE-A: 256-ary

Coax: 4096-ary

microwave links: 2048-ary



$$R_{max} = n \times B \times \overbrace{\log_2(1+SNR)}^{\text{bits/sec}}$$

$$1 \frac{\text{sym/sec}}{\text{Hz}} \times \log_2(1+SNR) \frac{\text{bits}}{\text{sym}}$$

* 1975, Marzouk: Faster Than Nyquist Signalling
FTN