ECS455 - 4 - 4 - DSSS and m-sequence

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1:22 PM

Review

DSSS : $m(t) \times c(t)$

$c(t)$ ↑ spreading code/sequence

One important collection of spreading codes is called the class of **m-sequences.**

Generated w/ LFSR whose connections correspond to primitive polynomial(s).

degree ↑

Important properties

1) maximal length : max. period $= 2^r - 1 = N$

2) Imitate properties of Bernoulli trials.

m-sequence → pseudo random
→ pseudo noise

3) Auto correlation

normalized (auto) correlation : $\frac{1}{N} \sum_{i=1}^{N} a_i a_{i-m}$

(normalized correlation : $\frac{1}{N} \sum_{i=1}^{N} x_i y_i$)

(normalized cross-correlation: $\frac{1}{N} \sum_{i=1}^{N} x_i y_{i-m}$)

For m-sequence,

	aligned	not aligned
auto-correlation	N	-1
Normalized "	1	$-\frac{1}{N}$