TIME Domain

FREQ Domain

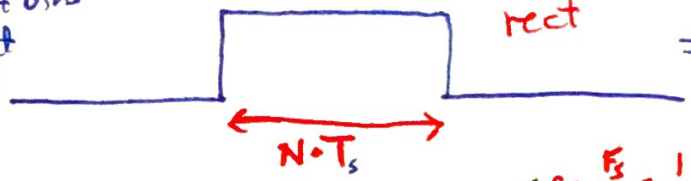
$e^{-j\frac{2\pi}{N}k \cdot n}$

ideal
k=1
sinusoid

- discete # of Bins
- mult by rect

Suppose phaser is at "k=1" freq.;
trying to detect only this frequency.
Model in time domain:

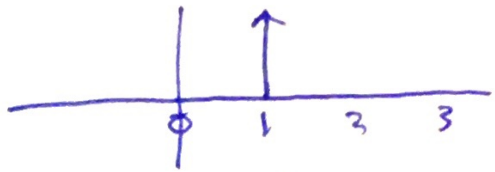
× multiply



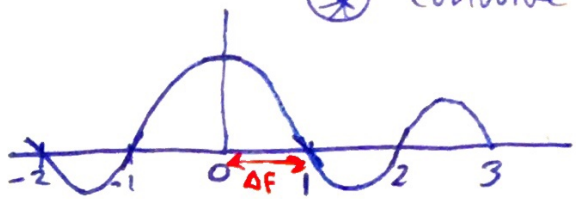
$\Delta f = \frac{F_s}{N} = \frac{1}{N \cdot T}$

=

Model in freq Domain



⊛ convolve

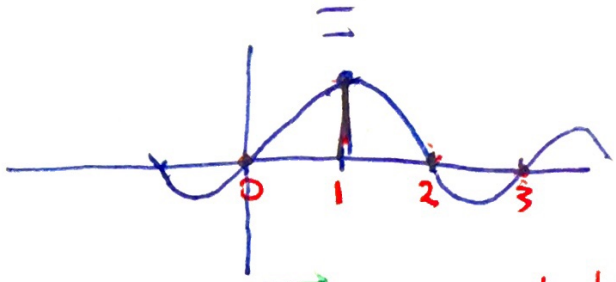


sync

(bins!)

key: zero crossing at k·Δf
except = 1 at zero bin

=



shifts to freq we are detecting

DFT "sampled" in freq domain