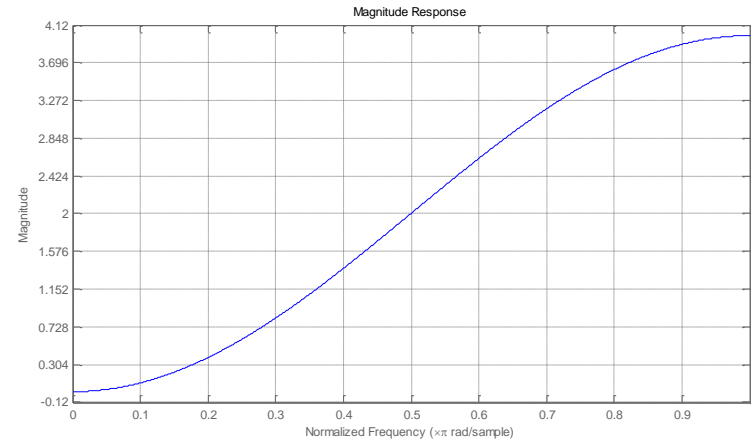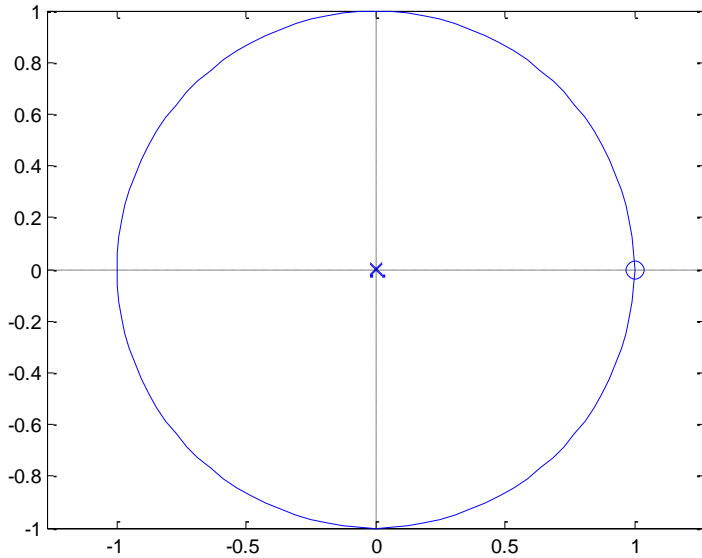# ECE 697 Delta-Sigma Converters Design

Lecture#12 Slides

Vishal Saxena
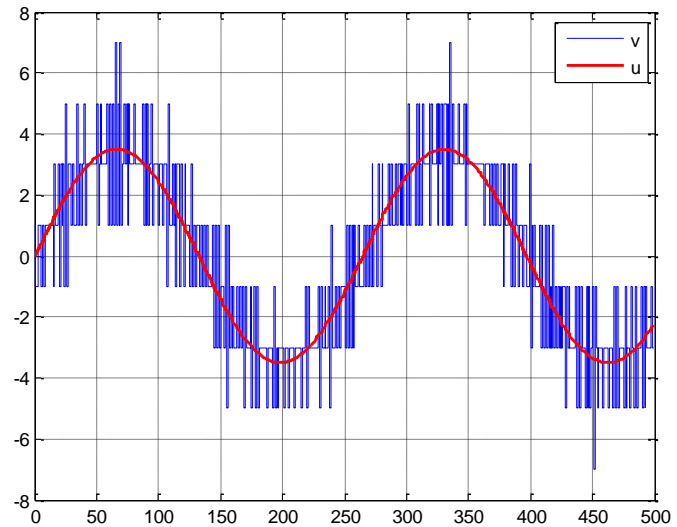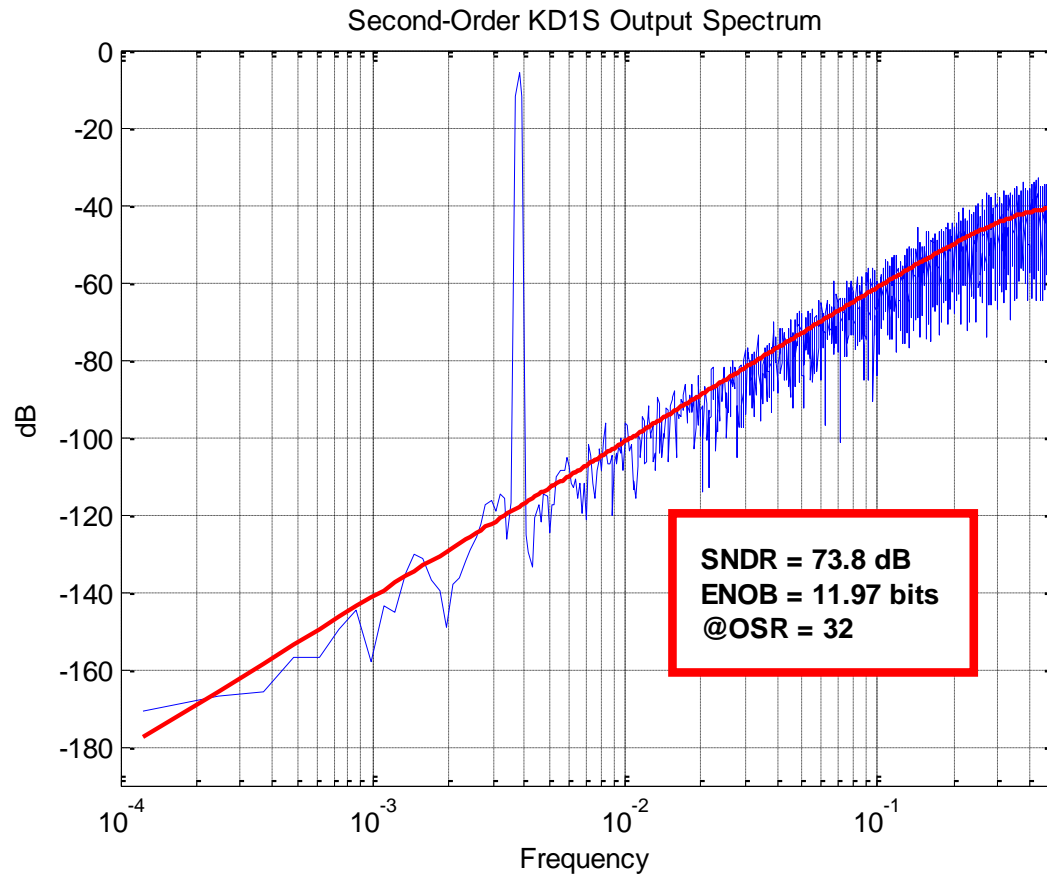(vishalsaxena@u.boisetstate.edu)

2ⁿᵈ order DSM

$$NTF(z) = (1 - z^{-1})^2$$
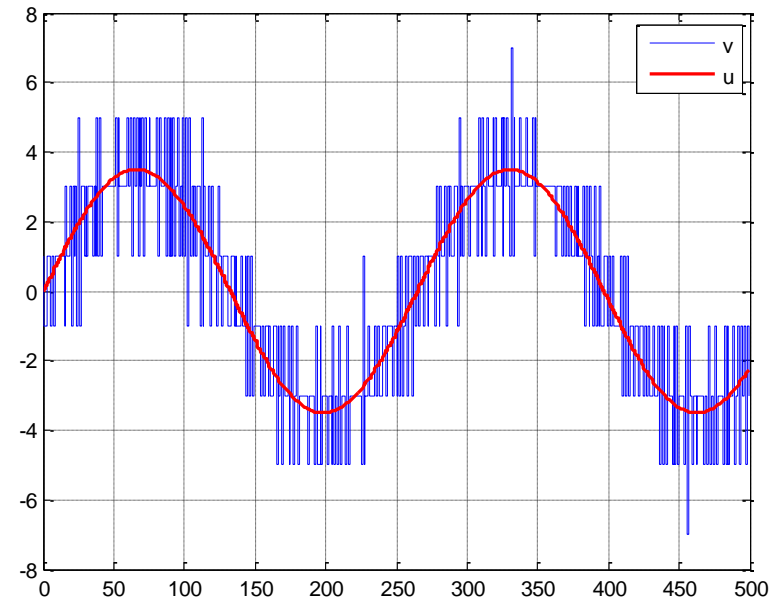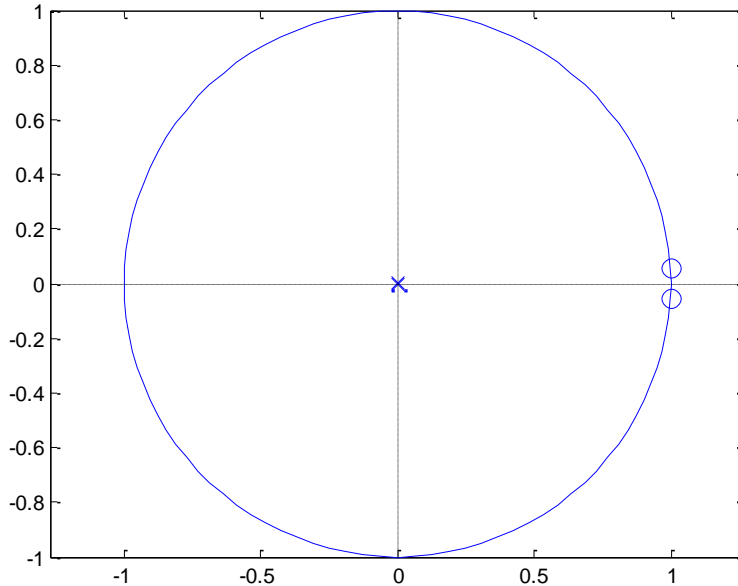
File: Second_Order_DSM_Zero_Opt.m
Set variable opt=0.

2nd order DSM: contd.

Second-Order KD1S Output Spectrum

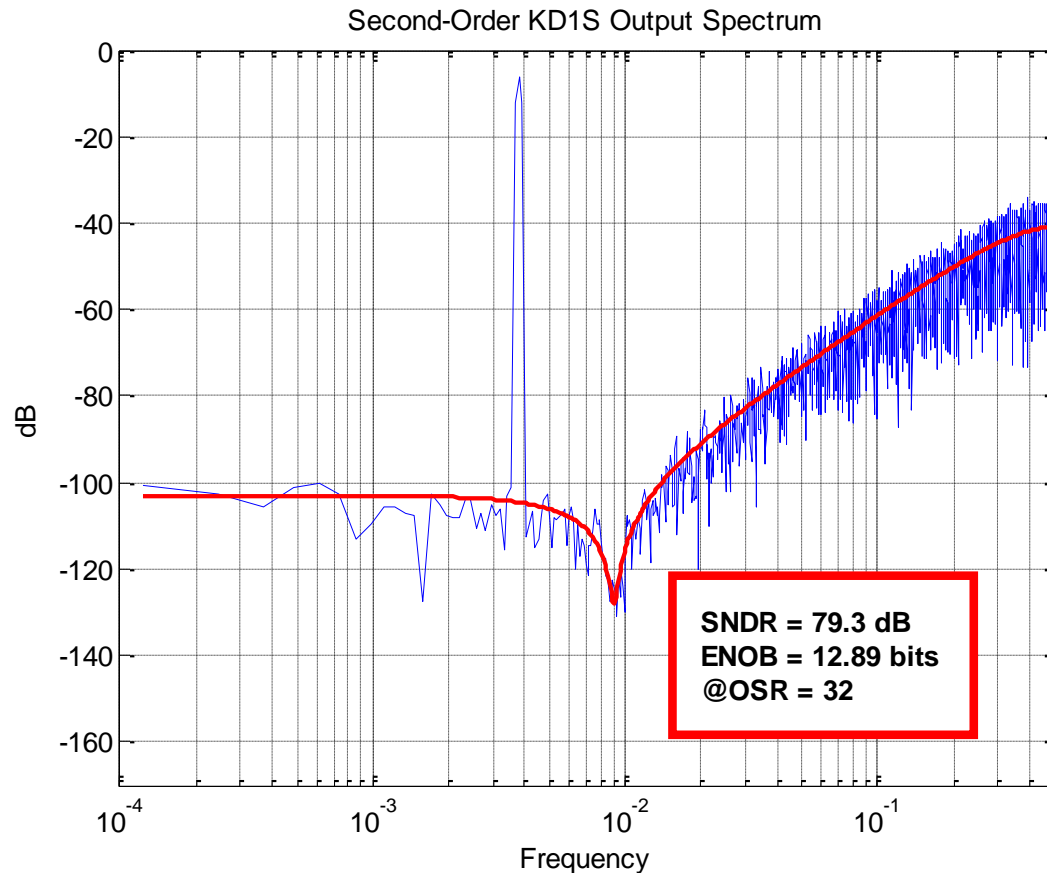SNDR = 73.8 dB
ENOB = 11.97 bits
@OSR = 32

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2nd order DSM: NTF Zero Optimization

$$NTF(z) = (1 - e^{j0.06}z^{-1})(1 - e^{-j0.06}z^{-1})$$

File: Second_Order_DSM_Zero_Opt.m
Set variable opt=1.

2nd order DSM: NTF Zero Optimization contd.

Second-Order KD1S Output Spectrum

SNDR = 79.3 dB
ENOB = 12.89 bits
@OSR = 32

- 5.5 dB increase in SQNR.
NTF pole (if any) optimization to be discussed later.