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clc; clear; close all;
%Michael Benker
%ECE471 Communication Theory
%Frequency Shift Keying
fc = 20000;
N = 10;
T = 0.1;
fs = 400000;
Ns = T.*fs;
kf = 4000;
mk = 2*round(rand(1,N)-0.5);
mk2 = sign(randn(1,N));
Ac = 10;
pulse = ones(1,Ns);
mt = kron(mk2, pulse);
imt = cumsum(mt./fs);
t = [0:Ns*N-1]./fs;
sfm = Ac.*cos(2.*pi.*fc.*t+ 2.*pi.*kf.*imt);

figure(1), subplot(5,1,1)
plot(mk2)
title('random inputs')

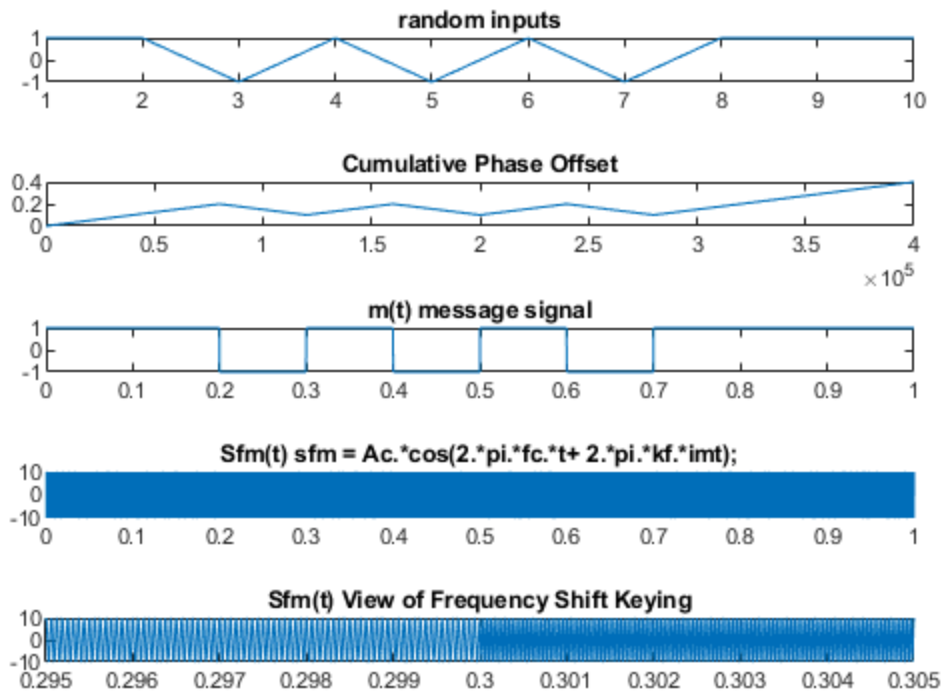
subplot(5,1,2)
plot(imt)
title('Cumulative Phase Offset')

subplot(5,1,3)
plot(t,mt)
title('m(t) message signal')

subplot(5,1,4)
plot(t,sfm)
title('Sfm(t) sfm = Ac.*cos(2.*pi.*fc.*t+ 2.*pi.*kf.*imt);')

subplot(5,1,5)
plot(t,sfm)
title('Sfm(t) View of Frequency Shift Keying')
xlim([0.295,0.305])
%plot(sfm)

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