
```
% Pratap Luitel
% Engs 92
% HW - 3, Problem 6

N = 128;          % length of signal vector
% n = 0:(N-1);    % vector index
T = 1;
f = zeros(128,1);
Cn = zeros(128,1);
for n = 0:N-1
    t = n/N;
    if t < 1/2
        f(n+1) = 2*(t);
    else
        f(n+1) = 2*(1-t);
    end
    %calculate the Cn's based on analytical result from 4.24
    Cn(n+1) = (0.5)*exp(-i*pi*n)*(sinc(i*n/2))^2;
end
F = fft(f);

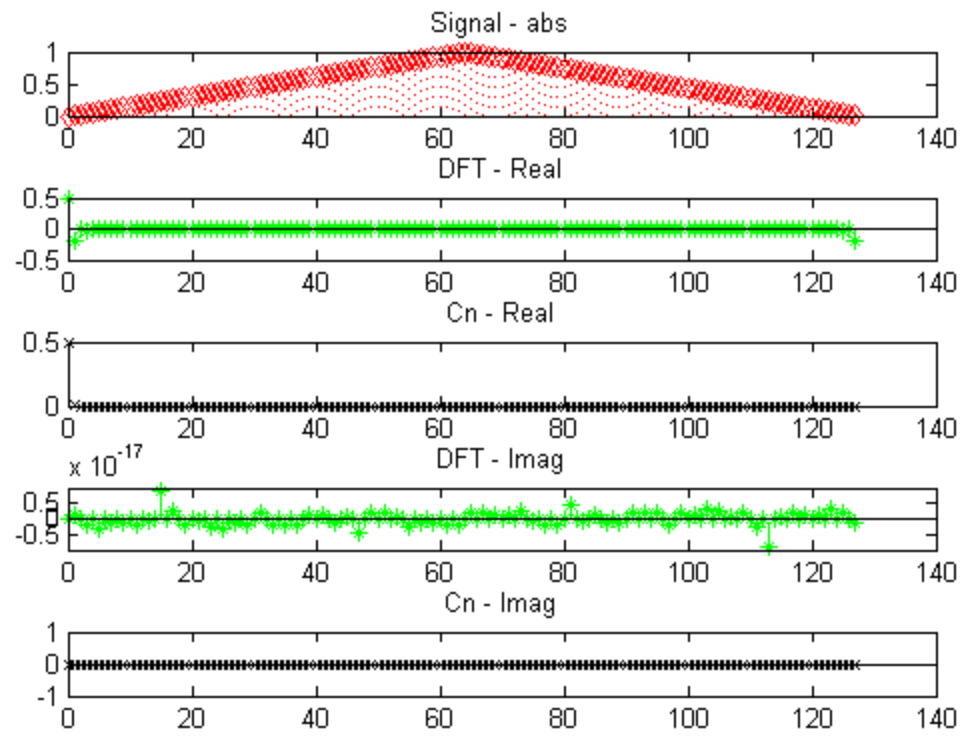
% plotting the result
subplot(5,1,1), stem (0:N-1, abs(f), ':diamondr');
title('Signal - abs')

subplot(5,1,2), stem (0:N-1, real(F)/N, ...
    'Linestyle', '--', ...
    'color', 'green', ...
    'marker', '*');
title('DFT - Real')

subplot(5,1,3), stem (0:N-1, real(Cn), ...
    'Linestyle', '-', ...
    'color', 'black', ...
    'marker', 'x');
title('Cn - Real')

subplot(5,1,4), stem (0:N-1, imag(F)/N, ...
    'Linestyle', '--', ...
    'color', 'green', ...
    'marker', '*');
title('DFT - Imag')

subplot(5,1,5), stem (0:N-1, imag(Cn), ...
    'Linestyle', '-', ...
    'color', 'black', ...
    'marker', 'x');
title('Cn - Imag')
```



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