

```

Ns = [5 10];           % number of equalizer coefficients

%----- Define modulation parameters

M = 16;               % size of alphabet
K = 2000;            % number of symbols to transmit

%----- Define channel parameters

h = [0.1 -0.1 -0.5 1 0.5];
sig = 0.1;          % noise standard deviation

ds = 0:(max(Ns)+length(h)-2);

%----- Generate alphabet

sM = sqrt(M); [x,y] = meshgrid((-sM+1):2:(sM-1), (-sM+1):2:(sM-1));
alphabet = x(:) + 1i*y(:);           %M-QAM alphabet
Ea = (norm(alphabet).^2)/length(alphabet);

%----- Generate channel output r

a = alphabet(ceil((length(alphabet)*rand(1,K))));
r = conv(a,h) + sig * randn(K + length(h)-1, 2) * [1;1i];

%-----

z = [];
for ii=1:length(Ns),
    N = Ns(ii);
    for jj=1:length(ds),
        d = ds(jj);

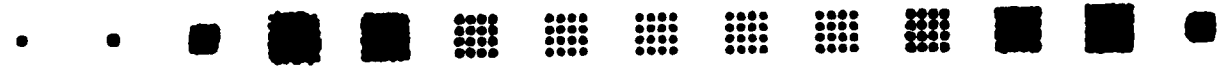
        rp = RpLE(h,Ea,sig,N,d); R = rp(:,1:N); p = rp(:,1+N);
        c0 = inv(R) * p;
        z0 = conv(r,c0);
        z = [z; z0(100:length(z0)-100) + 16*jj + 16i*ii];

        MSEmin = Ea - p'*inv(R)*p;
        db0 = 10*log10(abs(MSEmin));
    end;
end;

plot(z, '.'); axis equal;
title(['h = [', num2str(h), ']''])

```

N=10



N=5



d = 0 1 2 3 4 5 6 7 8 9 10 11 12 13

16 QAM alphabet

$$\sigma = 0.1$$

