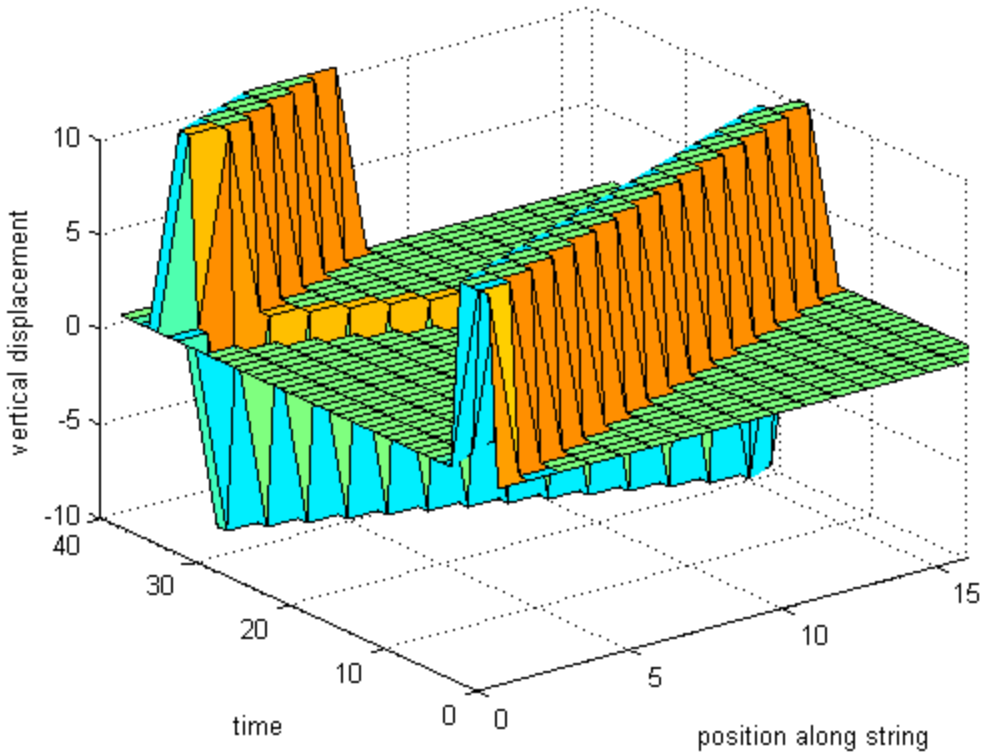
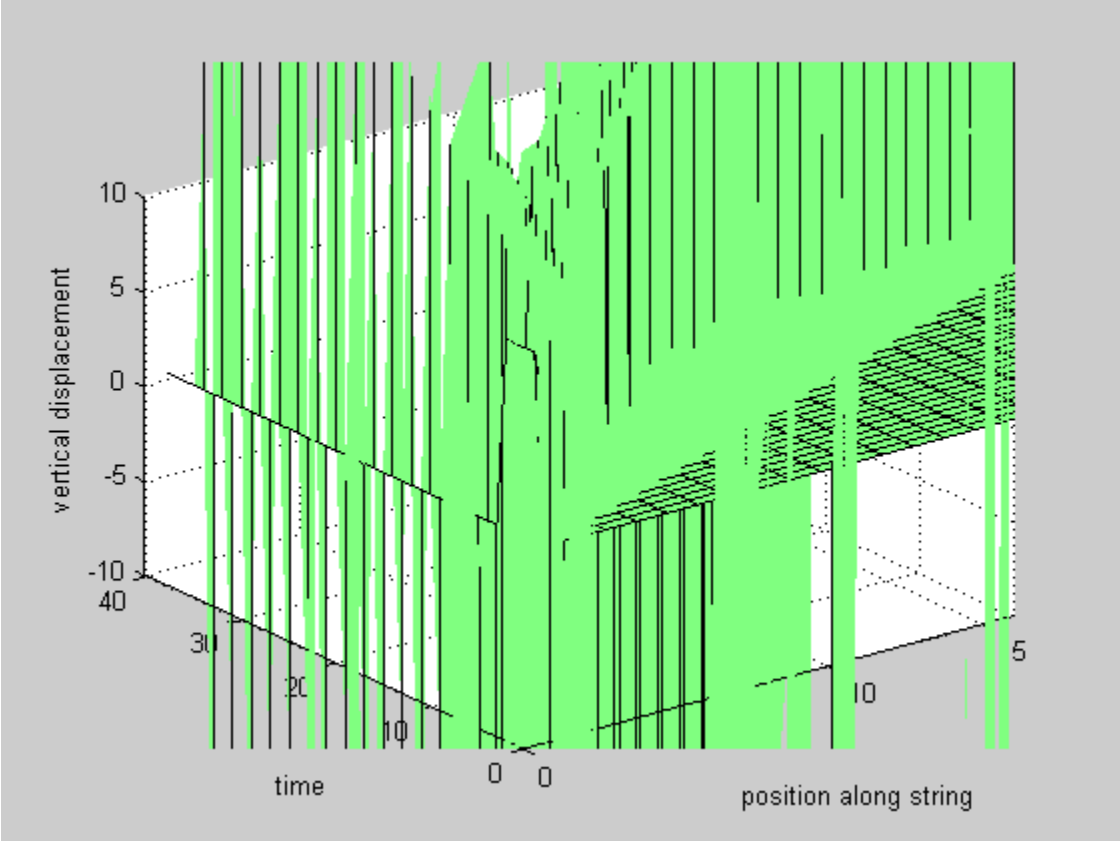
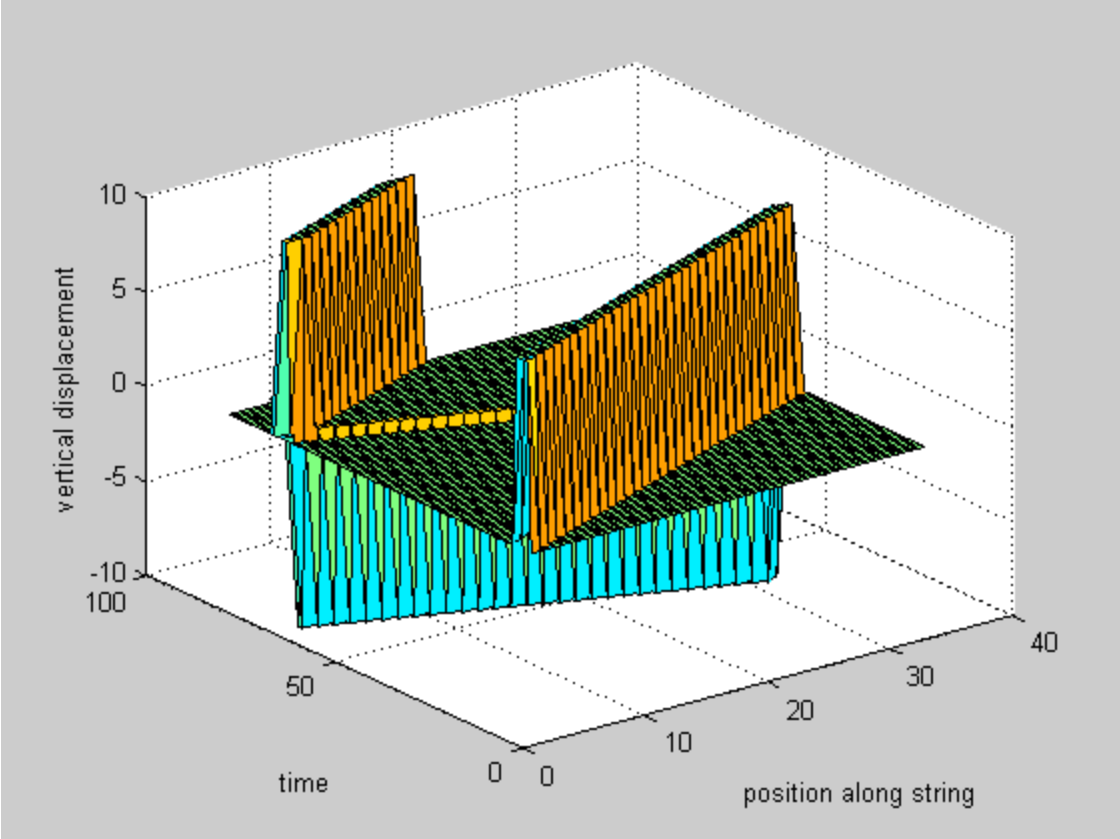
```
% script to call fwave
hx = 1/10;
ht = 1/10;
nx = 16;
nt = 40;
c = 1;
t=0:nt;
hib = zeros(nt + 1, 1);
lowb = zeros(nt + 1, 1);
lowb(2:5, 1) = 10;
init = zeros(1, nx + 1);
initslope = zeros(1, nx + 1);
u = fwave(nx, hx, nt, ht, init, initslope, lowb, hib, c);
surfl(u)
axis([0 16 0 40 -10 10])
xlabel('position along string');
ylabel('time');
zlabel('vertical displacement');


function u = fwave(nx, hx, nt, ht, init, initslope, lowb, hib, c)

alpha = c * ht / hx;
u = zeros(nt + 1, nx + 1);
u(:, 1) = lowb;
u(:, nx + 1) = hib;
u(1, :) = init;
for i = 2:nx,
   u(2, i) = alpha^2 * (init(i + 1) + init(i - 1))/2 + (1 - alpha^2) * init(i) + ht * initslope(i);
end

for j = 2:nt,
   for i = 2:nx,
      u(j + 1, i) = alpha^2 * (u(j, i + 1) + u(j, i - 1)) + (2 - 2 * alpha^2) * u(j, i) - u(j - 1, i);
   end
end
```



above – result of original file **below** – result after doubling the spatial sampling





above – result after doubling the temporal sampling (and the spatial sampling)