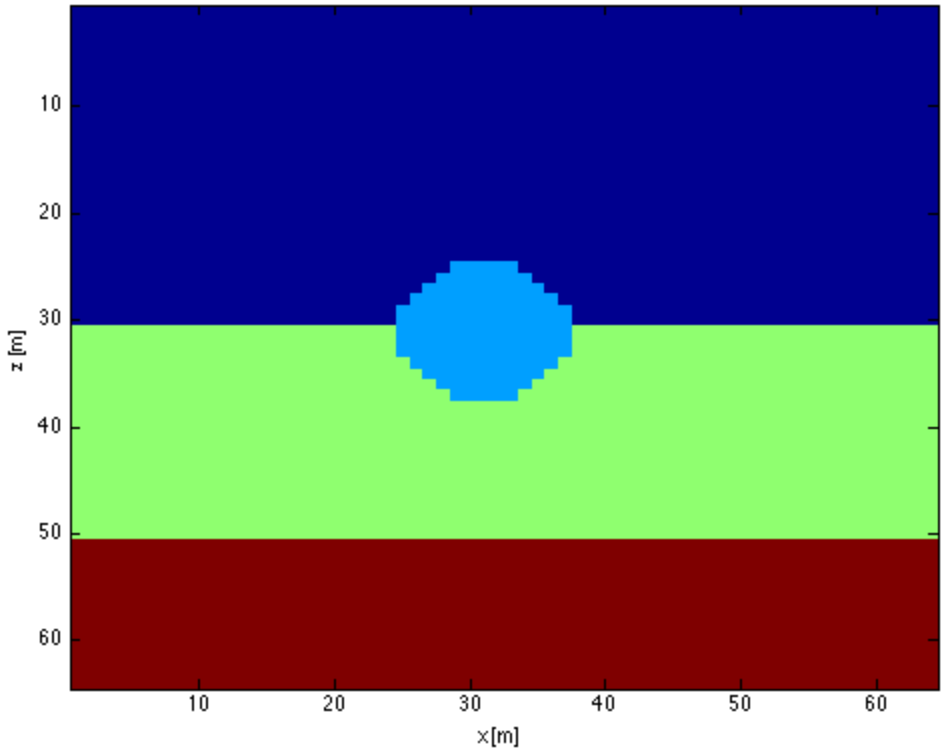
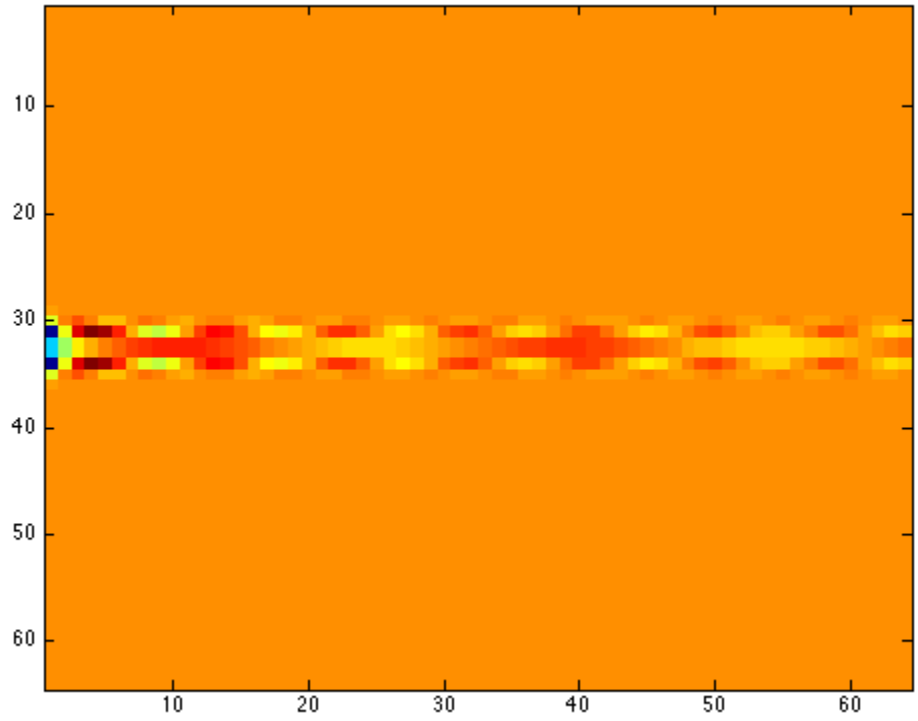
```
% addpath of some functions and operators
addpath /Volumes/Users/linamiao/Documents/Tools/Matlabtools/tuning/

clear
close all
```

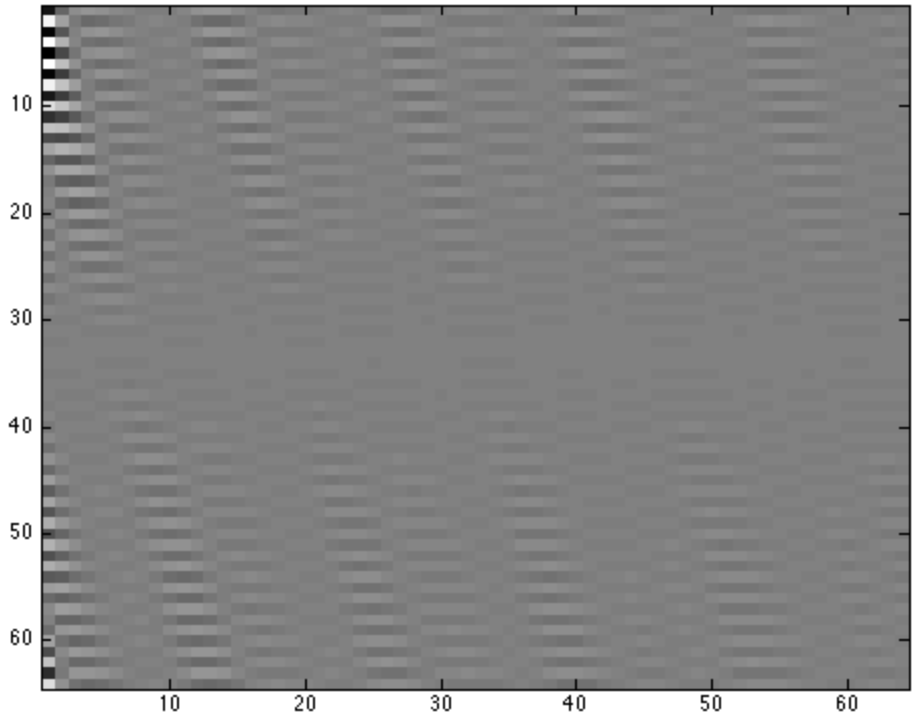
generate data

```
z = 0:10:630;
x = 0:10:630;
[zz,xx] = ndgrid(z,x);

% background velocity [m/s]
v0 = 1100 + 0*xx;

% perturbation
epsilon = .1;
dv = 0*xx;
dv((zz-100)>= 200) = epsilon*2000;
dv((zz-200)>= 300) = epsilon*4000;
dv((zz-300).^2 + (xx - 300).^2<= 4000) = epsilon*1100;

v = v0+dv;
figure;imagesc(v);xlabel('x [m]');ylabel('z [m]');zlabel('velocity [m/s]');zlim([2

% Modeling
% grid, z = o(1) + [0:n(1)-1]*d(1), z = o(1) + [0:n(2)-1]*d(2);
model.o = [0 0];
model.d = [10 10];
model.n = [64 64];
model.nb = [3 3 0];

% frequencies [Hz]
model.freq = linspace(-250,250,64); nfreq = length(model.freq);

% Ricker wavelet peak frequency and phase shift
model.f0 = 10;
model.t0 = 0;

% source and receiver positions
model.zsrc = 10;
model.xsrc = 0:10:630; nsrc = length(model.xsrc);
model.zrec = 10;
model.xrec = 0:10:630; nrec = length(model.xrec);

% define point sources, each column of this matrix represents a source
% function defined on the grid {model.zsrc,model.xsrc}. A point source is
% represented as a spike on one of the gridp-points. If we take Q to be an
% identity matrix, each column represents a point-source on a different
% gridpoint.

Q = speye(nsrc);
```

```
% define model in [km^2/s^2]
m = 1e6./(v0(:) + dv(:)).^2;

% create data
D = F(m,Q,model);

% reshape vectorized data into data-cube for plotting purposes
D = reshape(D,[nrec,nsrc,nfreq]);

D = permute(D,[3,1,2]);

save DD D model x z v ;

% plot frequency slices
figure;imagesc(real(D(:,:,1)))

Fx = opDirac(64);
Ft = opDFT(64);
F = opKron(Fx,Fx,Ft);
dd = F'*vec(D);
d = reshape(dd,64,64,64);
figure;imagesc(real(d(:,:,1)));colormap(gray);




% keyboard;
```

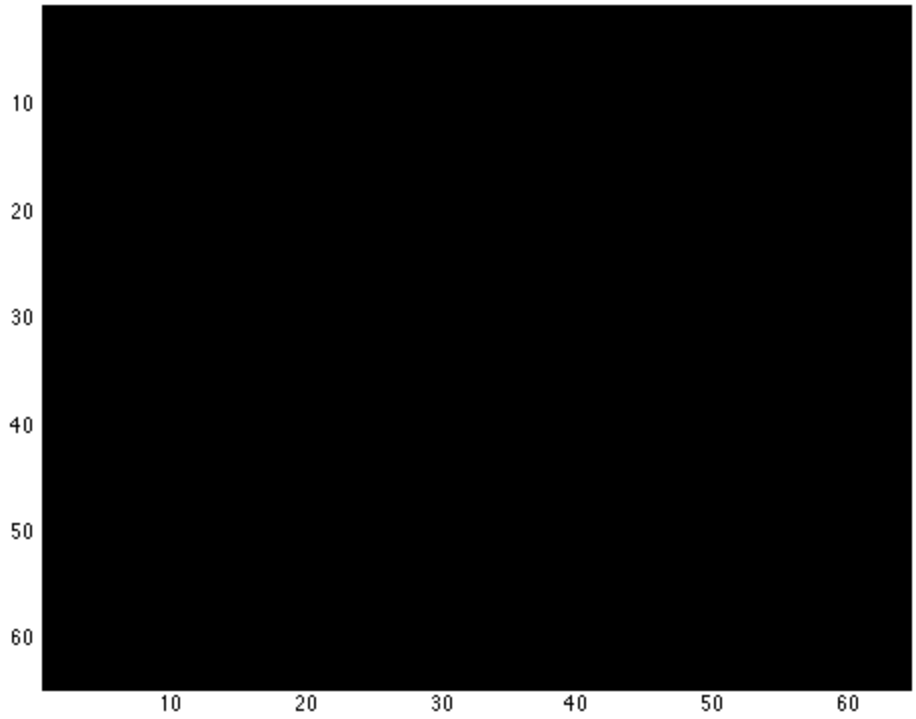

10
20
30
40
50
60
z [m]
10
20
30
40
50
60
x[m]

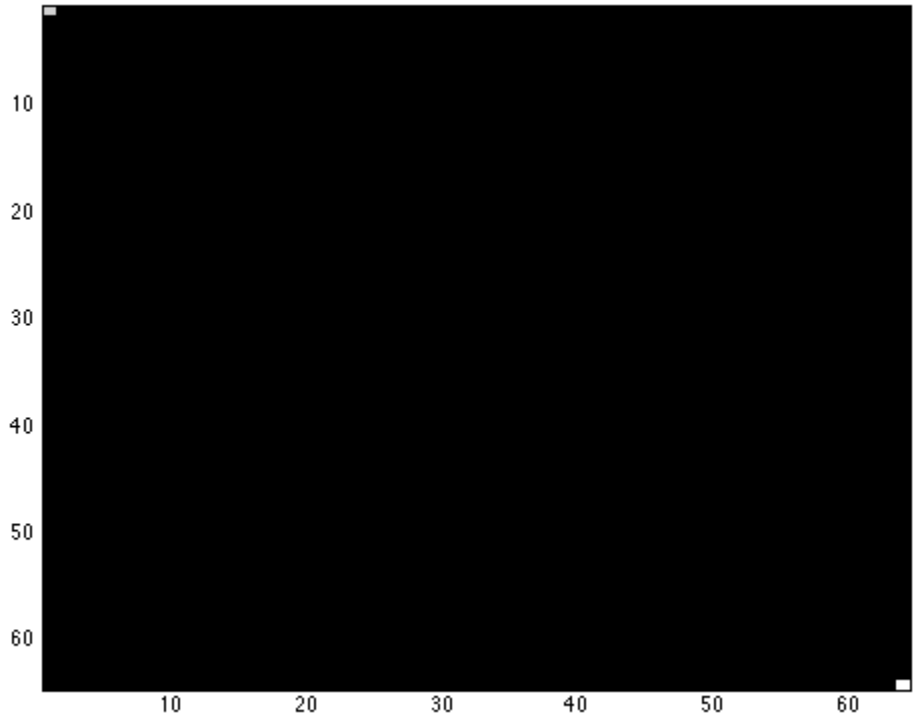

10
20
30
40
50
60
10
20
30
40
50
60

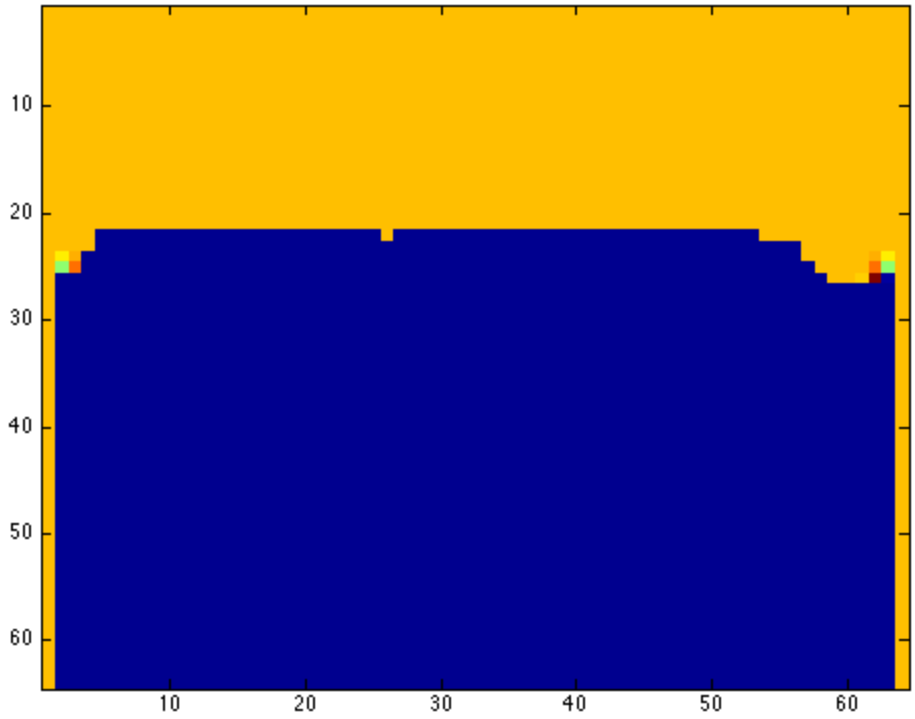


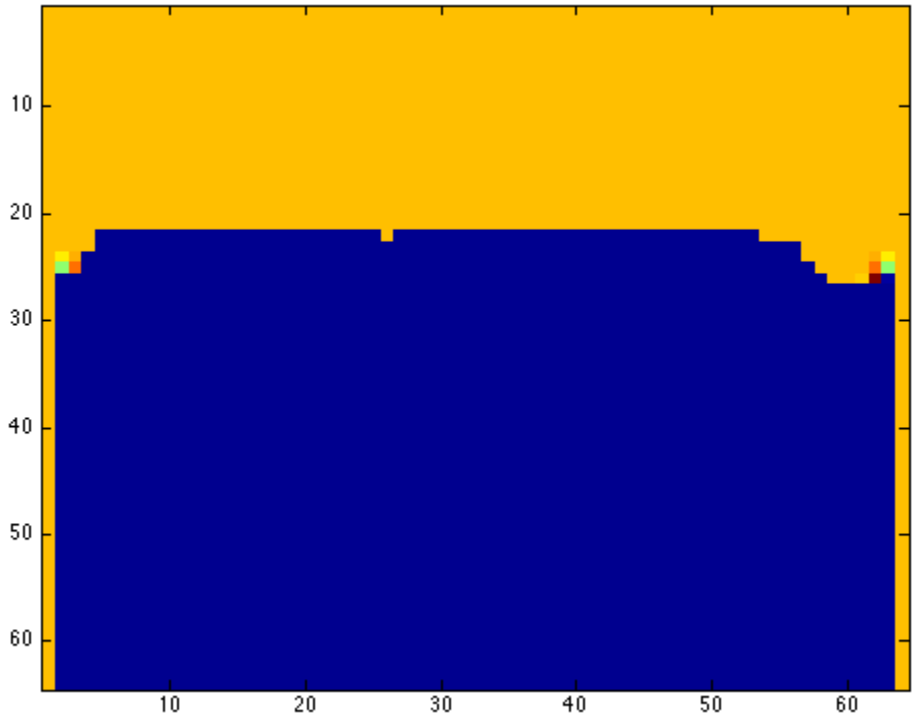
migration

```
clear;close all;
load DD;
data = D;
% image = DSRImagingDFT2D(data,v(1:length(z)),z,x,model.freq,1);
%[image,uu] = DSRImagingDFT3D(data,v(1:length(z)),z,x,model.freq,1);
image = my_mig(data,model.freq,x,z,v,1);
figure; imagesc(real(image)); %colormap(gray)
```


10
20
30
40
50
60
10
20
30
40
50
60


10
20
30
40
50
60
10
20
30
40
50
60


10
20
30
40
50
60
10
20
30
40
50
60


10
20
30
40
50
60
10
20
30
40
50
60

Published with MATLAB® 7.13