

Import BiF Data From Directory

Import Data From Workspace

Import Bif(6)

Load WS

Import Bif3D

Down binning or normalizing the data cannot be undone. You must reload the original data in order to restore the original matrix.

Downbin Data

Normalize Data

Adjust Total Counts Threshold Value

☒ Work with Uncorrected Data

Overlay Tools

Color Overlay

PCA Tools

3D Tools

2D Profiles

Close

☐ If you want to save the movie frames check this box before creating the movie.

Create XY Corr Slice Movie

Create XZ Corr Slice Movie

Create YZ Corr Slice Movie

Number of image layers:

Data Being Displayed: Total_Count

< ----- X ----- >

Layer number:

1

Layer number:

1

< ----- X ----- >

0 column # 1

< ----- Y ----- >

0 row # 1 256

This tutorial contains navigation buttons that enable you to move throughout the tutorial.

Please use the navigation buttons and not the page up/page down or arrow keys to navigate through the tutorials.

This is the 'Next' button. It takes you to the next frame or stop point.

This is the 'Previous' button. It takes you to the previous frame or stop point.

This is the 'Go to frame' button. It takes you to a specified frame.

This is the 'Go to URL' button. It takes you to a website link.

Press the 'Next' button below to start this tutorial.

84

0

1

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> 🌐

Z corrected image XZ

Save Corr XZ

Z line YZ

Z corrected image YZ

Save Corr YZ

Import BiF Data From Directory

Import Data From Workspace

Import Bif(6)

Load WS

Number of image layers: 84

Down binning or normalizing the data cannot be undone. You must reload the original data in order to restore the original matrix.

Downbin Data

Normalize Data

Adjust Total Counts Threshold Value

☒ Work with Uncorrected Data

Overlay Tools

3D Tools

Color Overlay

2D Profiles

PCA Tools

Close

Data Being Displayed
Total_Counts

Peak List

Initialize Corrected Data

Z corrected image XY

< ---- X ---- >

| Total Counts |
|--------------|
| 15.02 |

< ---- X ---- >

84

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This tutorial will cover the updates to the 3D PCA panel. Changes include the ability to choose pre-processing options and the option to run PCA on the full 3D image set or to run PCA on the summed depth profile and then project the full data into the calculated model.

In the future the ability to calculate PCA from a random selection of voxels will be added.

← →

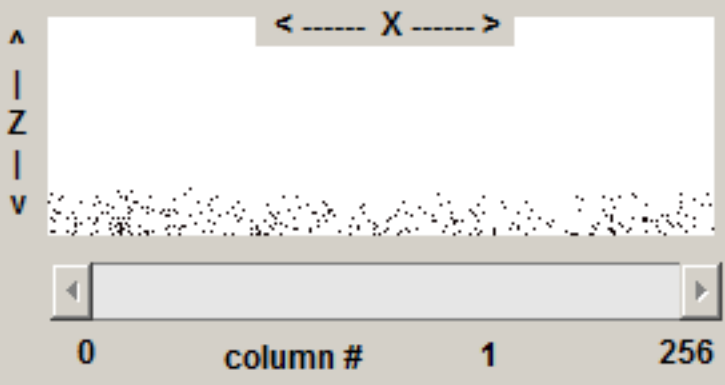
☐ If you want to save the movie frames check this box before creating the movie.

Create XY Corr Slice Movie

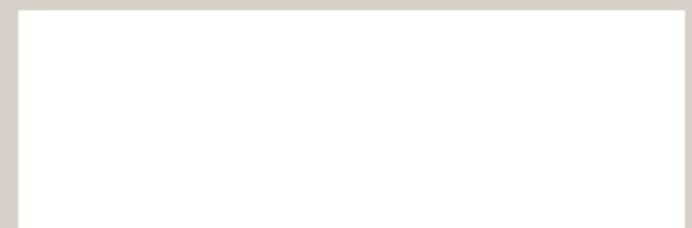
Create XZ Corr Slice Movie

Create YZ Corr Slice Movie

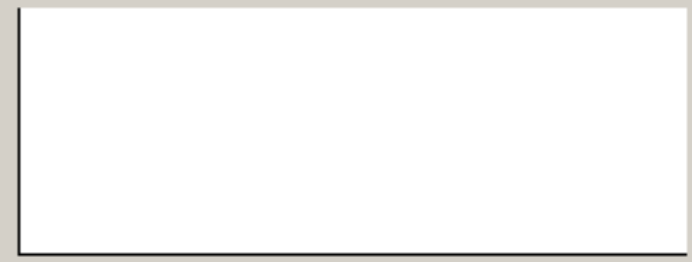
Layer number: 1



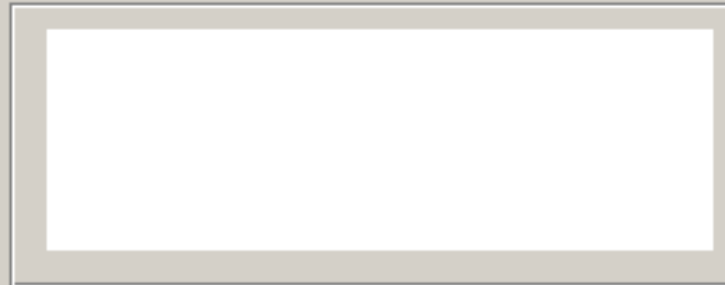
Thresholded total counts XZ



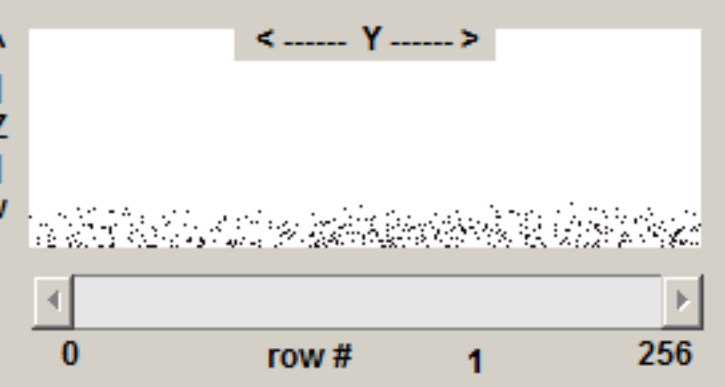
Z line XZ



Z corrected image XZ



Save Corr XZ



Thresholded total counts YZ



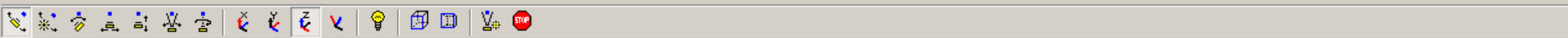
Z line YZ



Z corrected image YZ

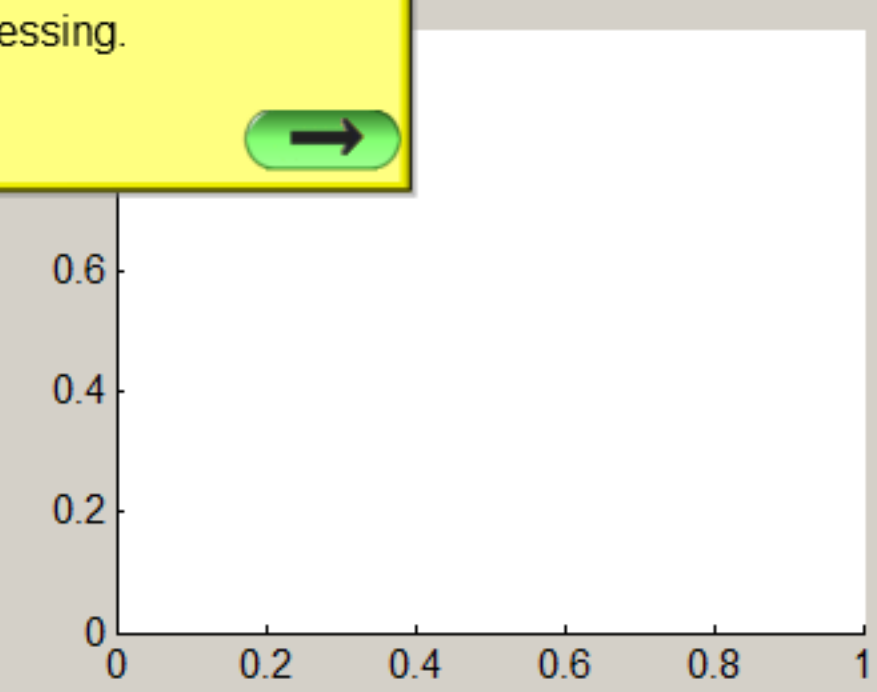
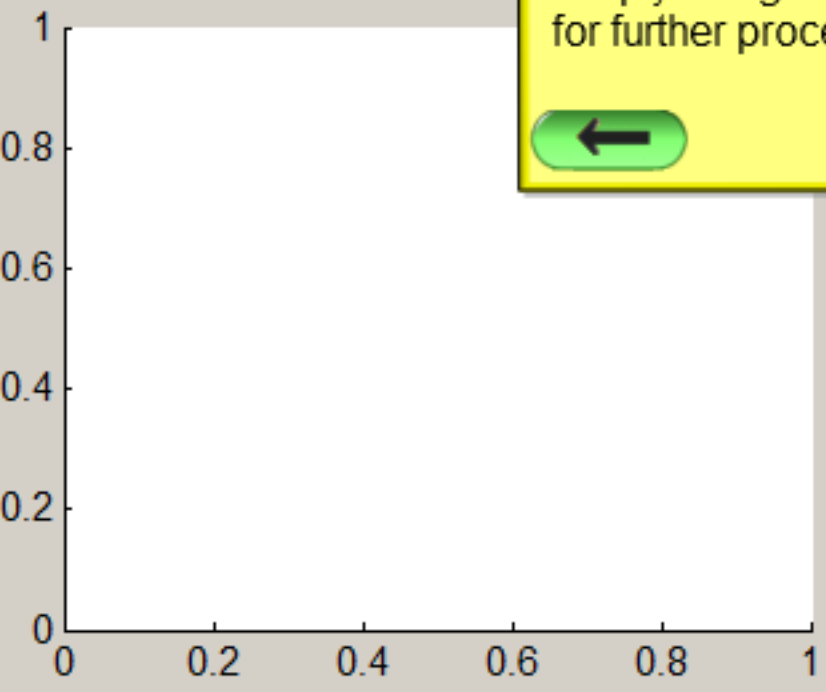
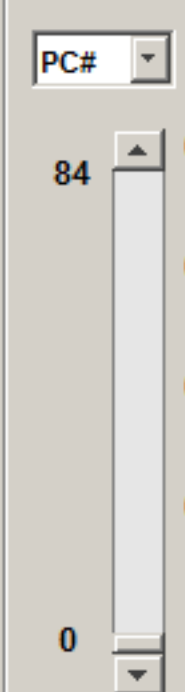


Save Corr YZ

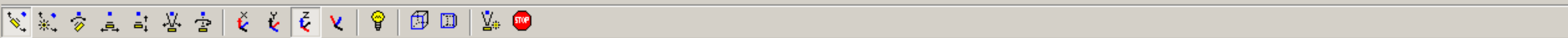


Prep 3D matrix

Once in the 3D PCA panel, press the 'Prep 3D matix' button. This simply reorganizes the data matrix for further processing.



Close Panel



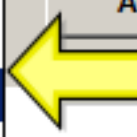
Prep 3D matrix

Choose Scaling Method...

Run PCA on 3D data

Apply PCA from SDR

- Choose Scaling Method...
- None
- Poisson Scale - Mean Center
- Square root - Mean Center
- Autoscale (use with caution)



Next choose the pre-processing option you want to use. Here we choose Poisson scaling and mean centering.

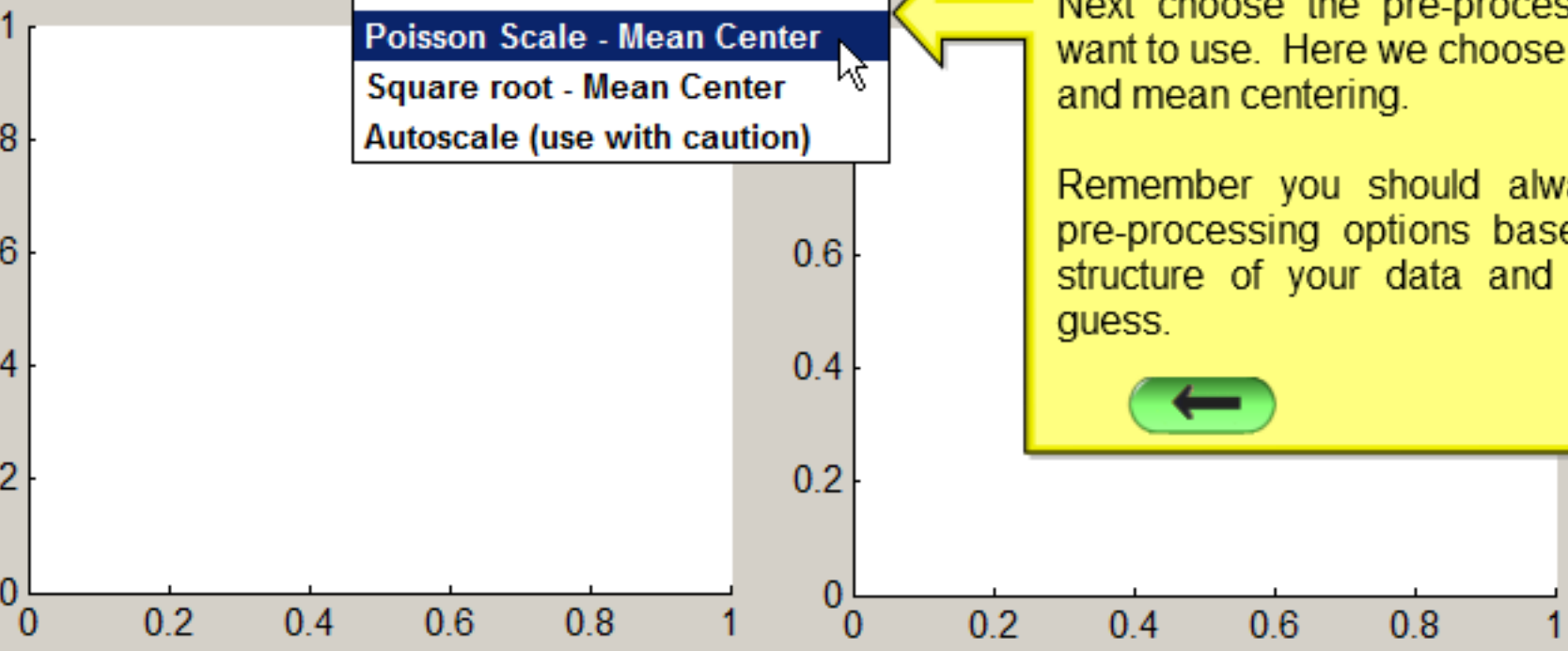
Remember you should always choose the pre-processing options based off the noise structure of your data and not just from a guess.



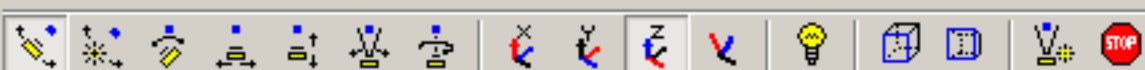
PC#

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Close Panel

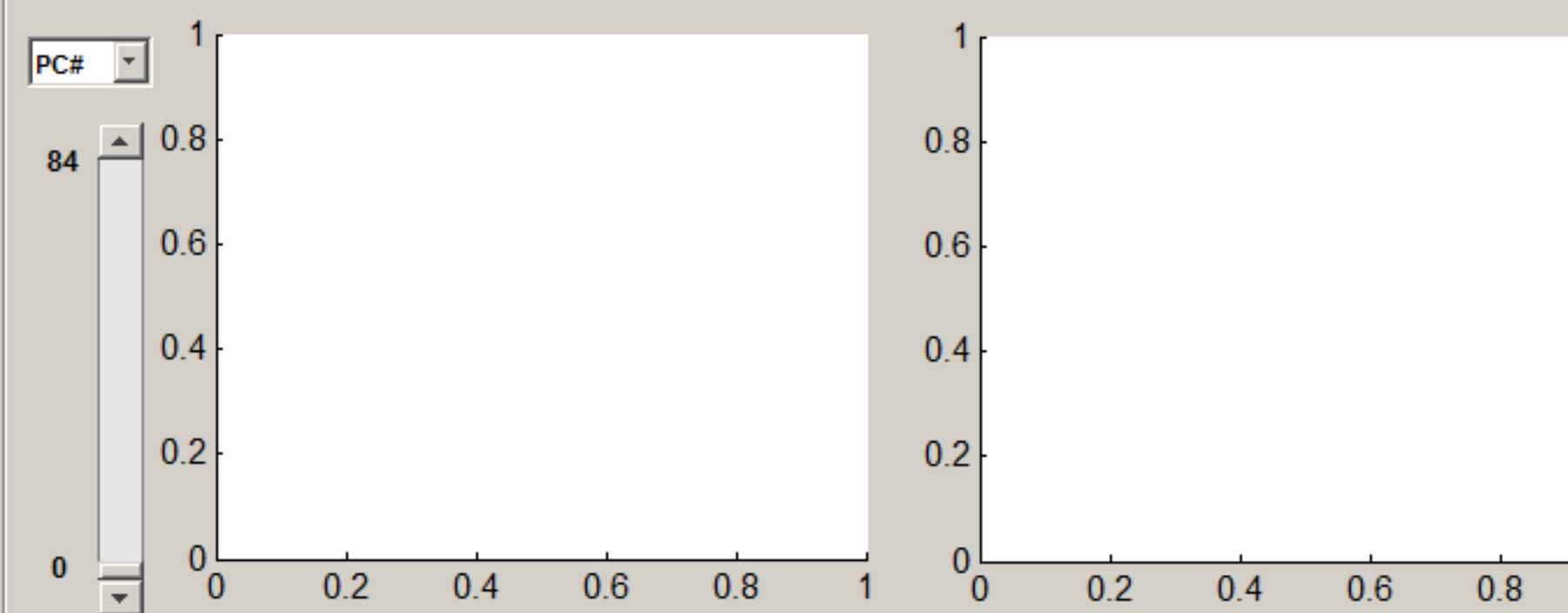


Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP



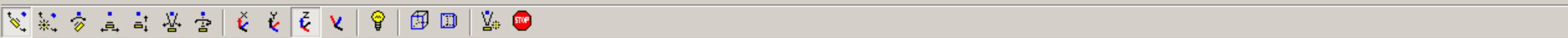
Next choose how you want to use PCA.

'Run PCA on 3D data' uses the entire 3D data set for the PCA calculations.

'Apply PCA from SDP' first sums the depth profile into a summed image, then runs PCA on the summed image and then applies the PCA model to the full 3D data set. This option can be useful if the 3D volume has consistent chemical variations throughout all layers. Otherwise it is best to use to use the full 3D data set.



Close Panel



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

Check which axes you want to rotate around

☐ X ☐ Y ☐ Z

Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

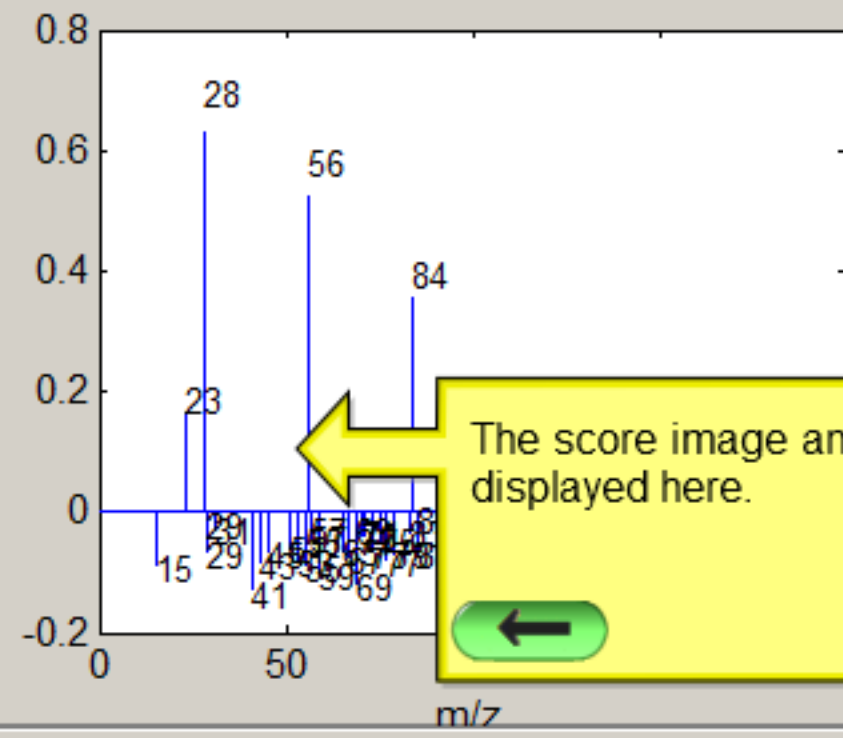
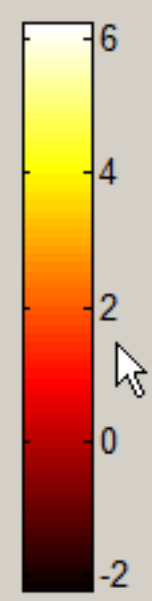
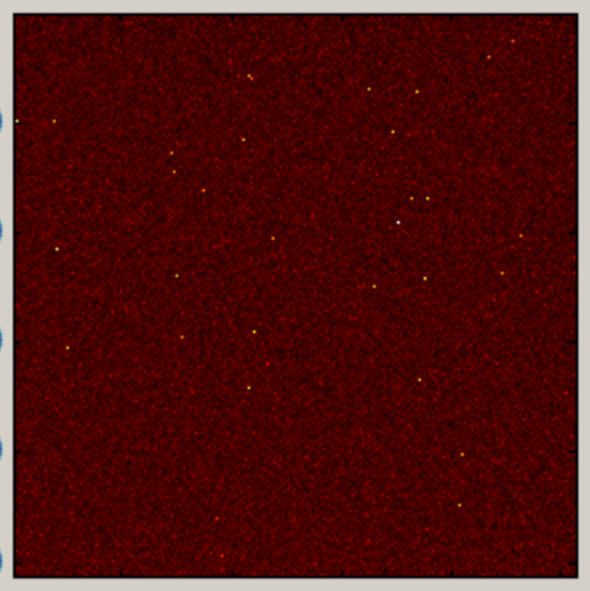
Save Snaпshot

Change Colormap

Choose one...

factor = 1

1
84
50
100
150
200
250
0



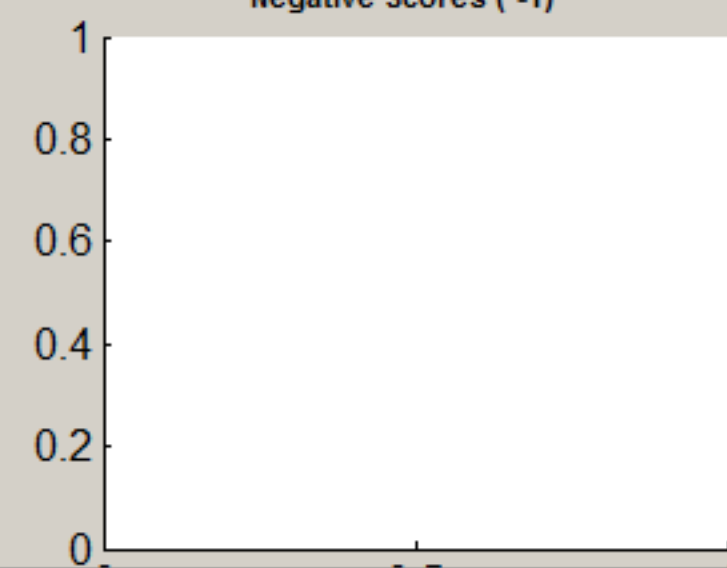
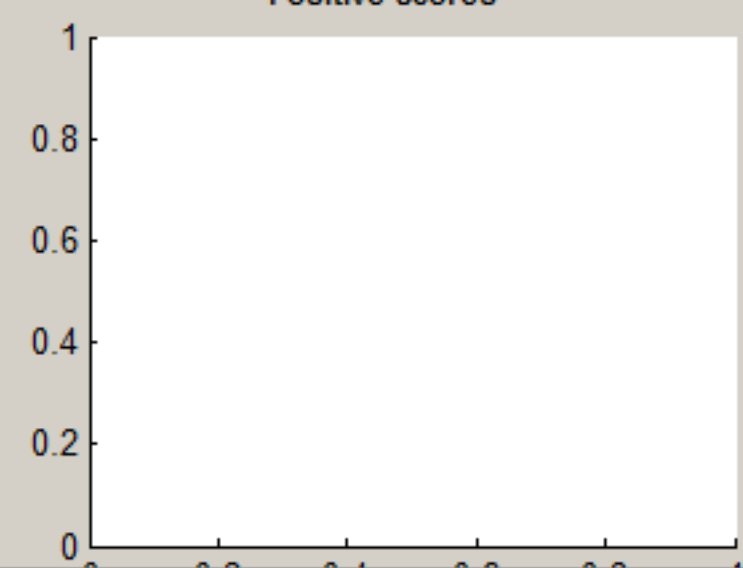
The score image and loadings are displayed here.



Layer number: 2

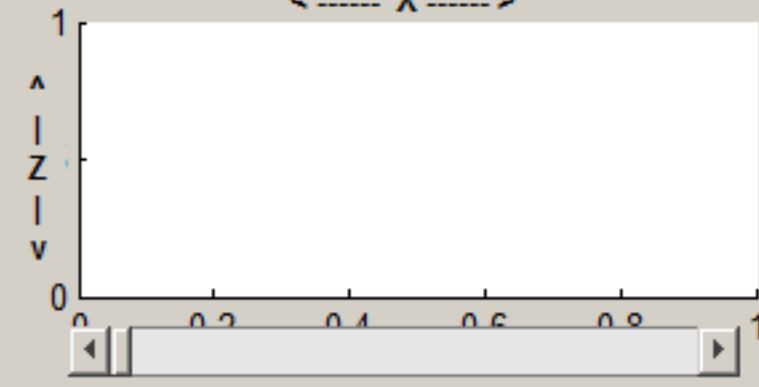
Positive Scores

Negative Scores (*-1)



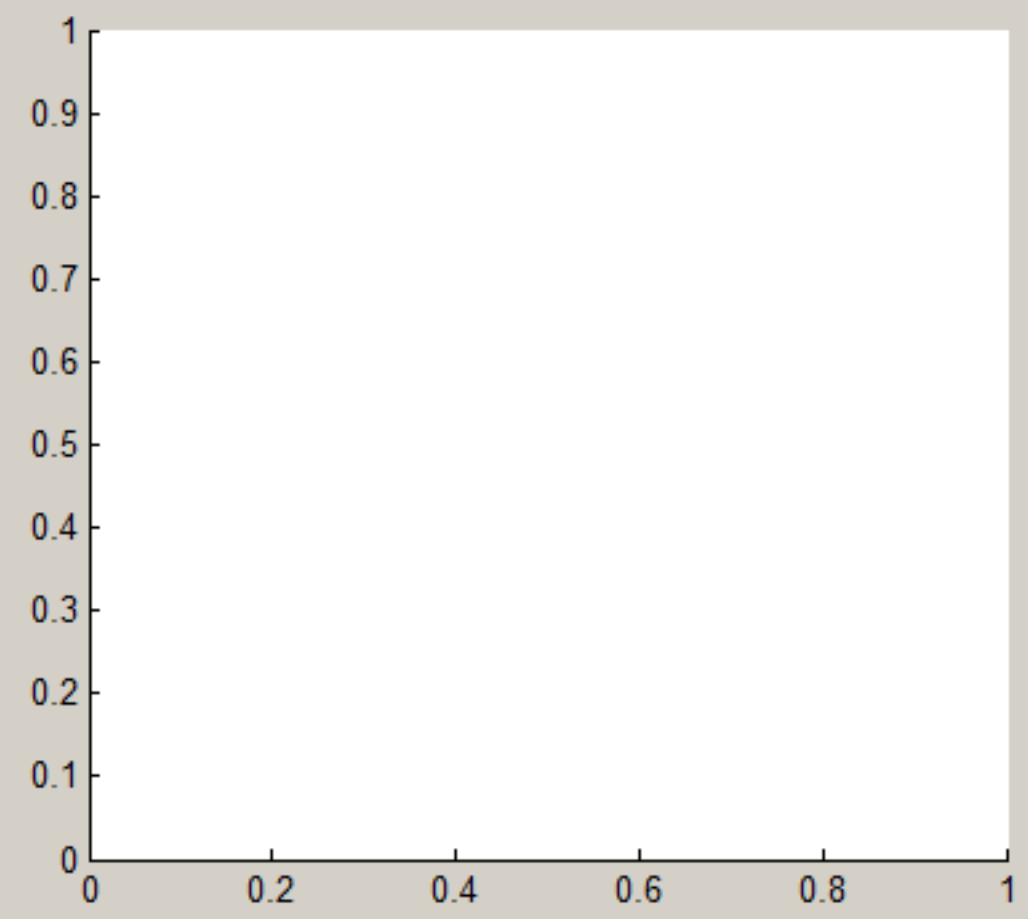
<----- X ----->

<----- Y ----->

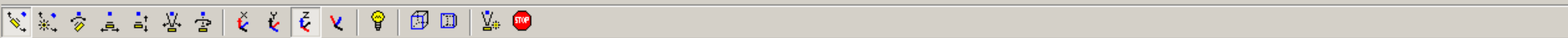


min row # 1 256

min row # 1 256



Close Panel



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

Check which axes you want to rotate around

☐ X ☐ Y ☐ Z

Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snaпhsot

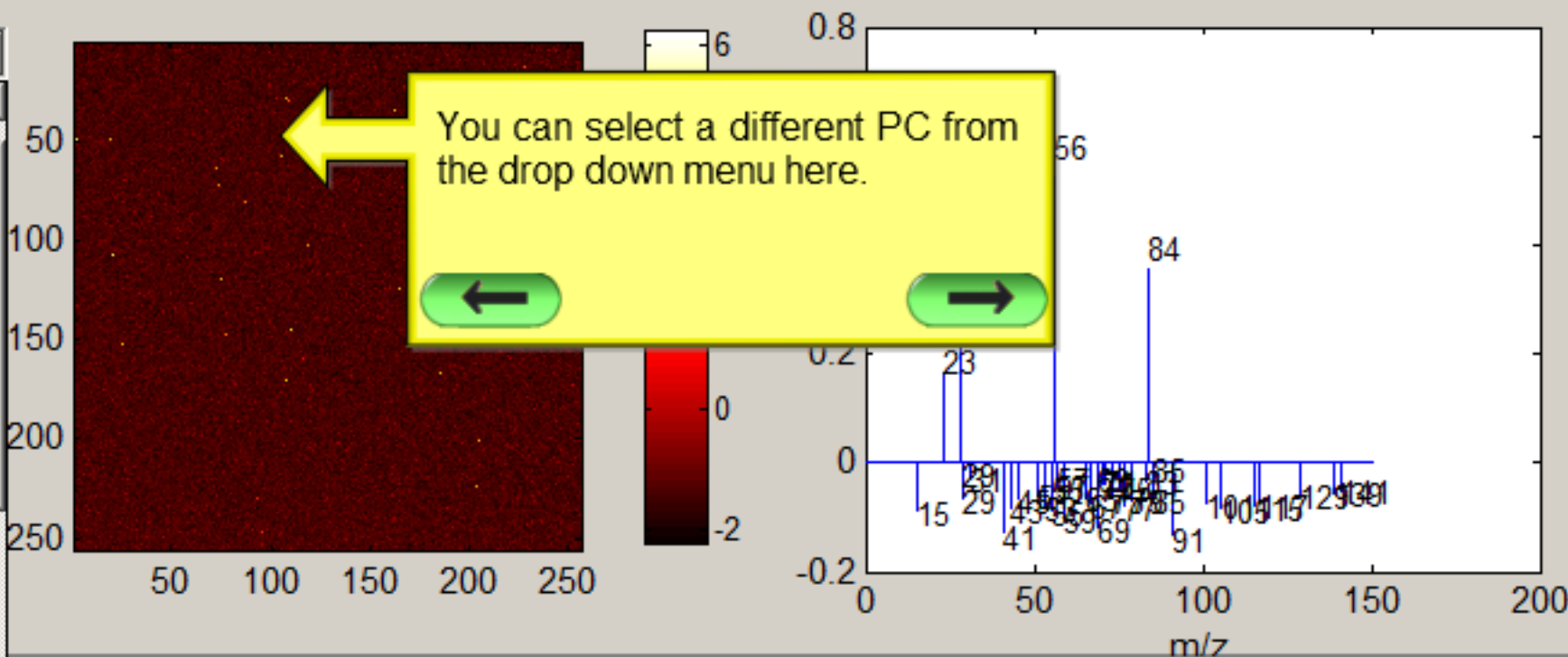
Change Colormap

Choose one...

Z scale factor = 1

You can select a different PC from the drop down menu here.

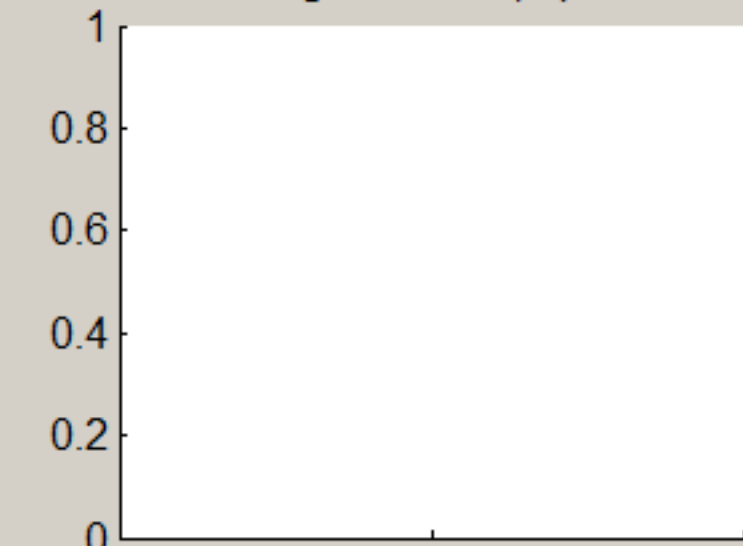
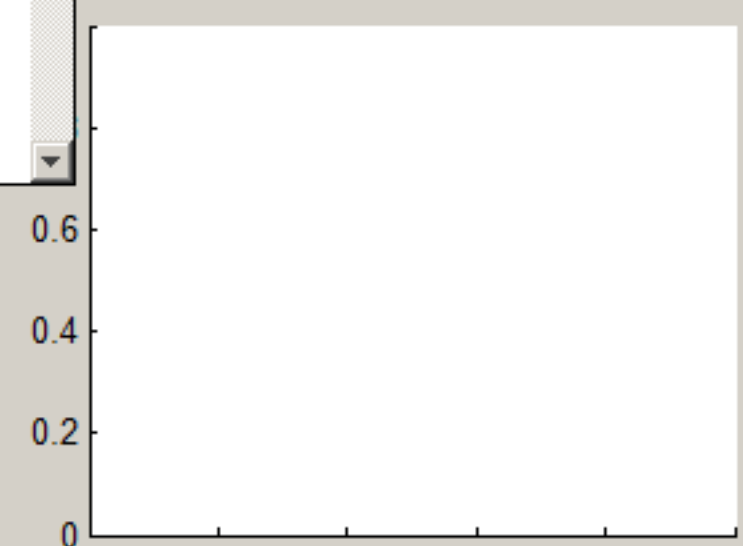
- 1
- 2
- 3
- 4
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- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20



Layer number: 2

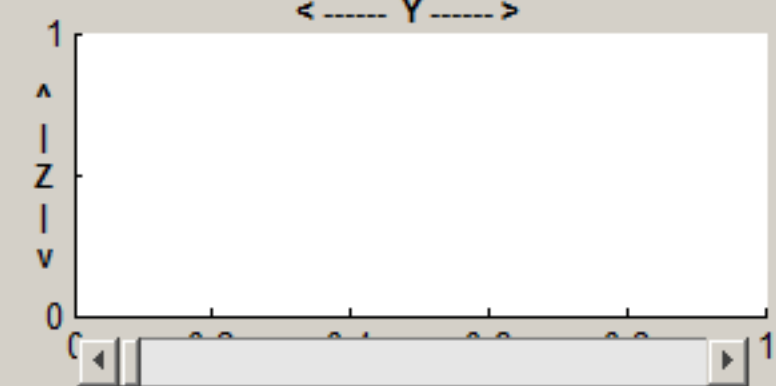
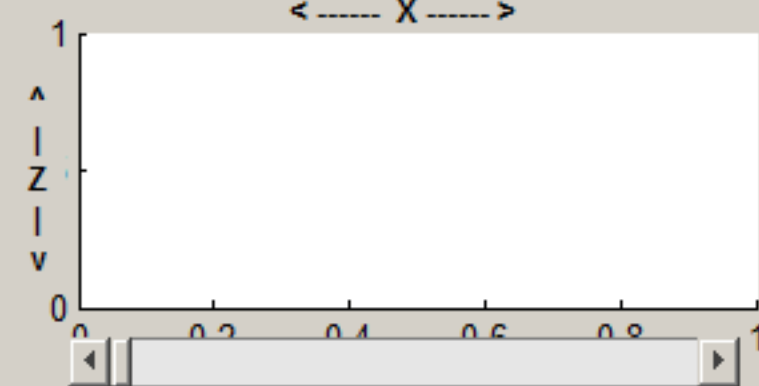
Positive Scores

Negative Scores (*-1)



<----- X ----->

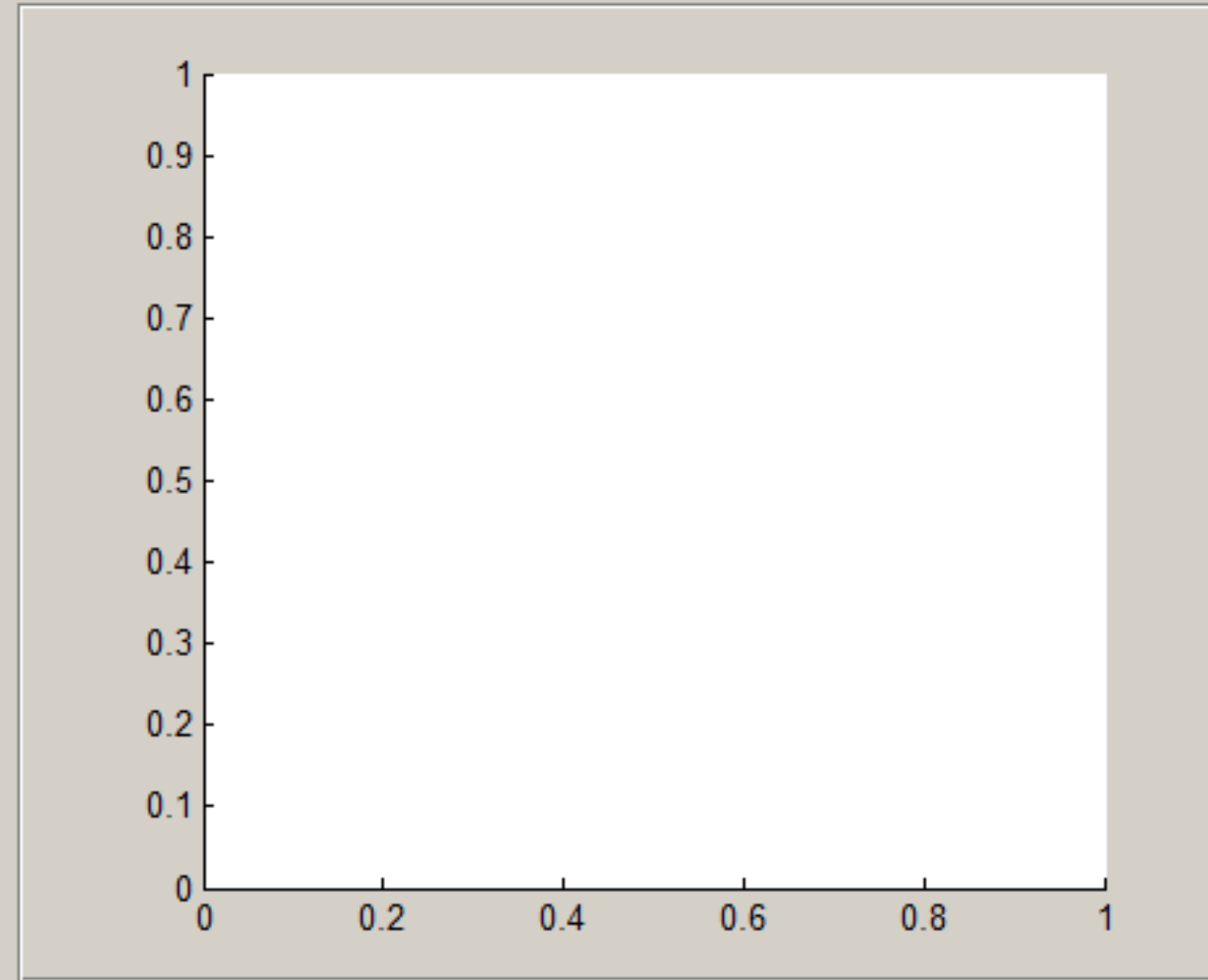
<----- Y ----->

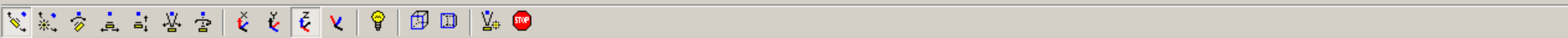


min row # 1 256

min row # 1 256

Close Panel



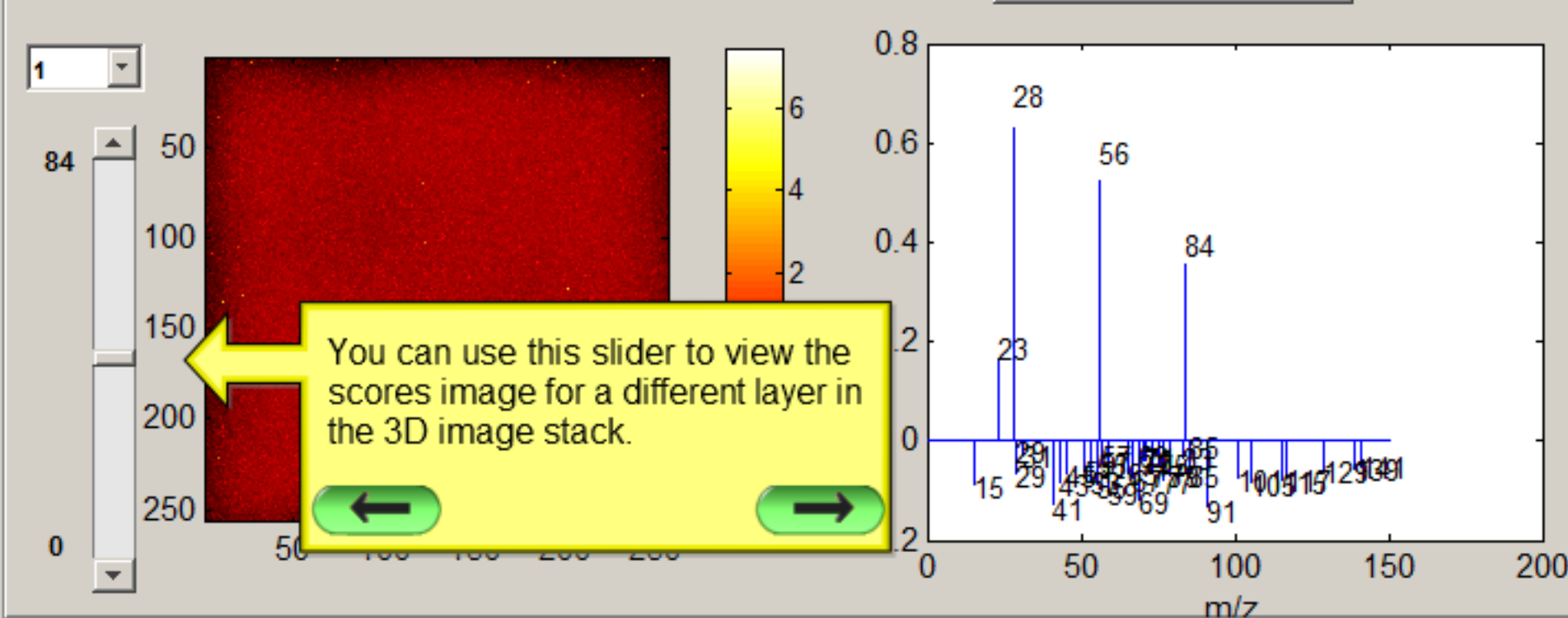


Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP



☐ Check Box To Smooth Data For Display

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snapshot

Change Colormap
10 Choose one...

Z scale factor = 1

Check which axes you want to rotate around

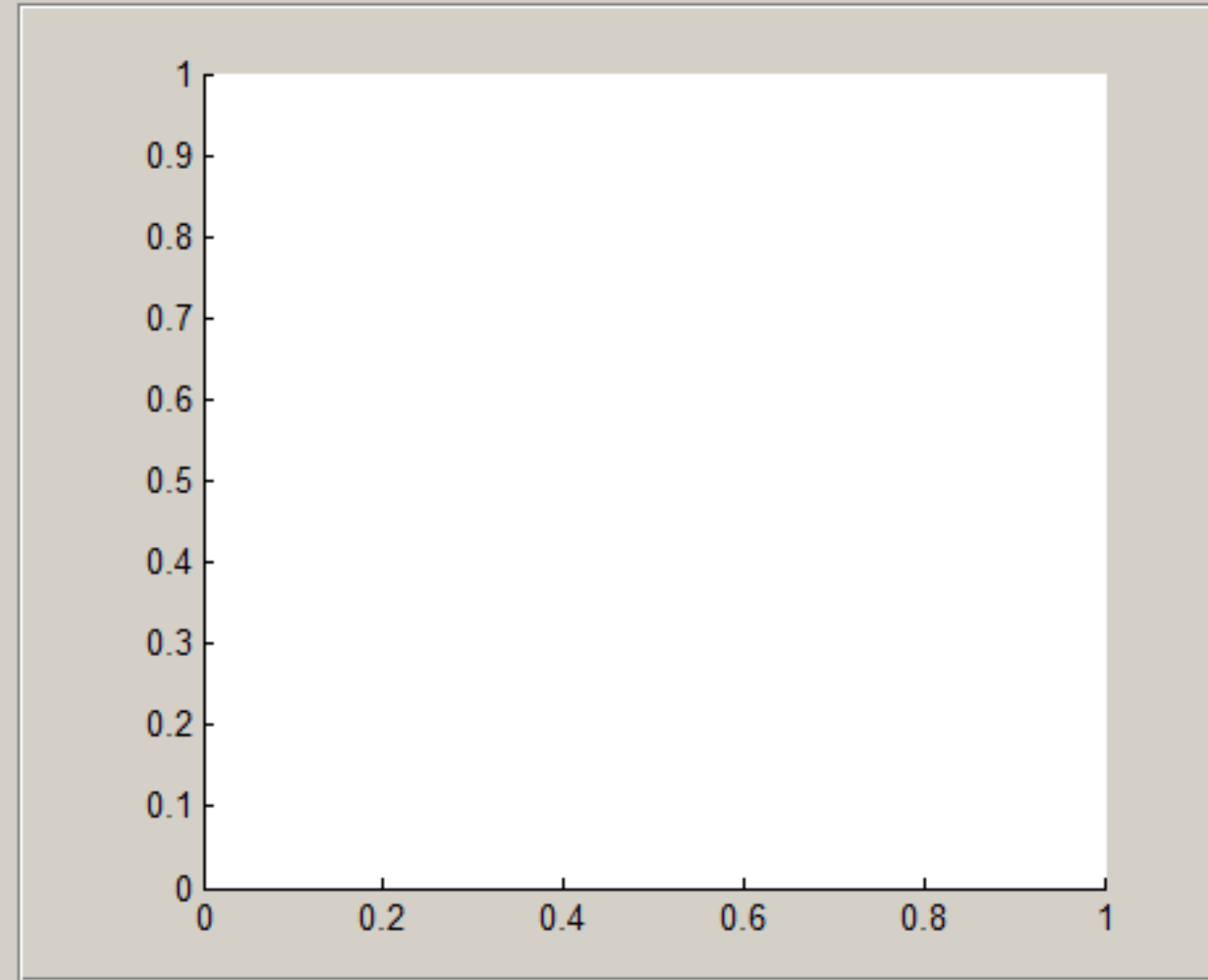
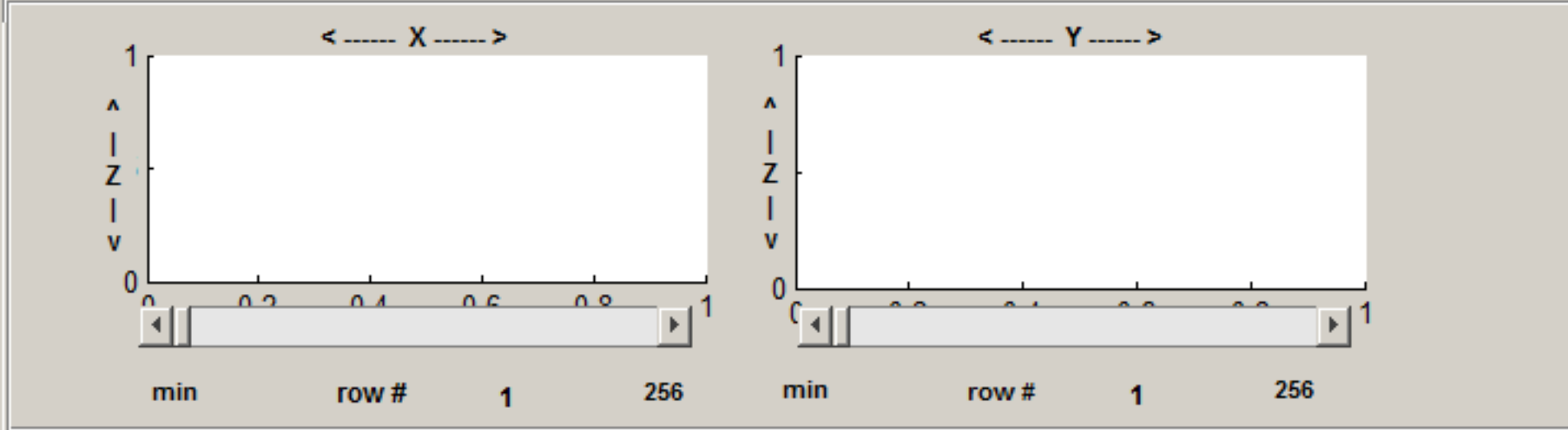
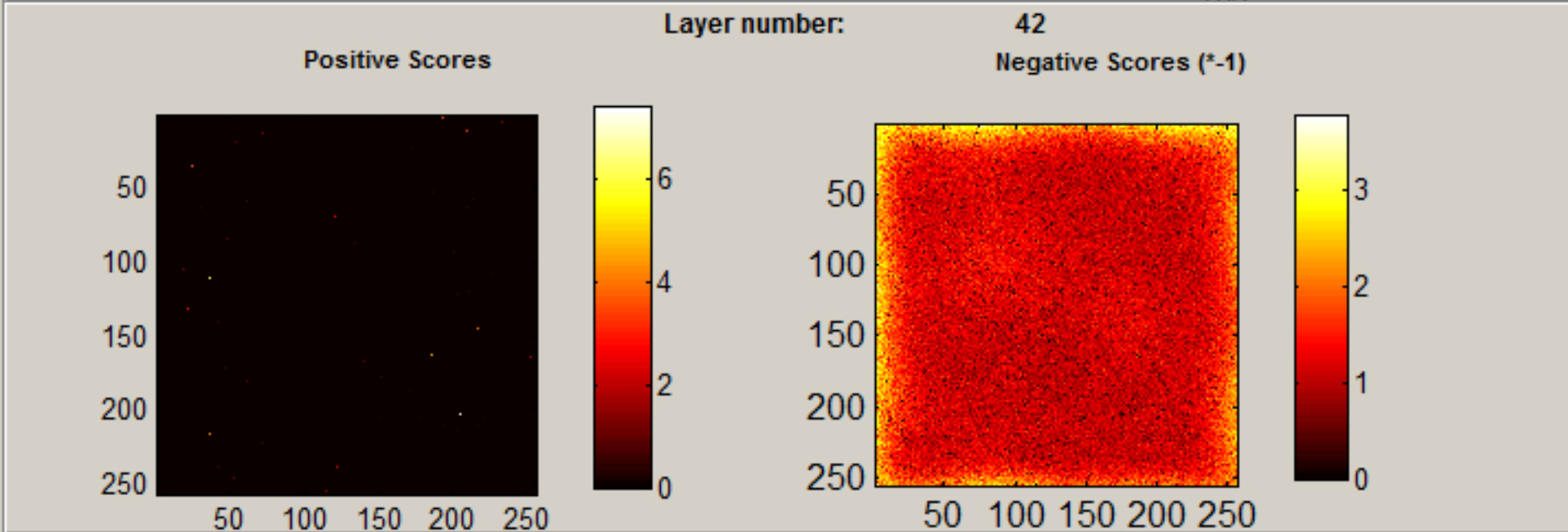
☐ X ☐ Y ☐ Z

Number of degrees for rotation

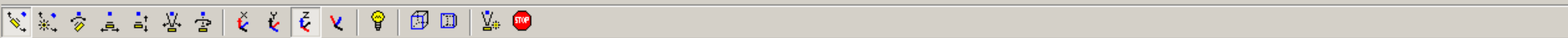
Preview

Create 3D Movie

Unfold Scores



Close Panel



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

Check which axes you want to rotate around

☐ X ☐ Y ☐ Z

Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snaphsot

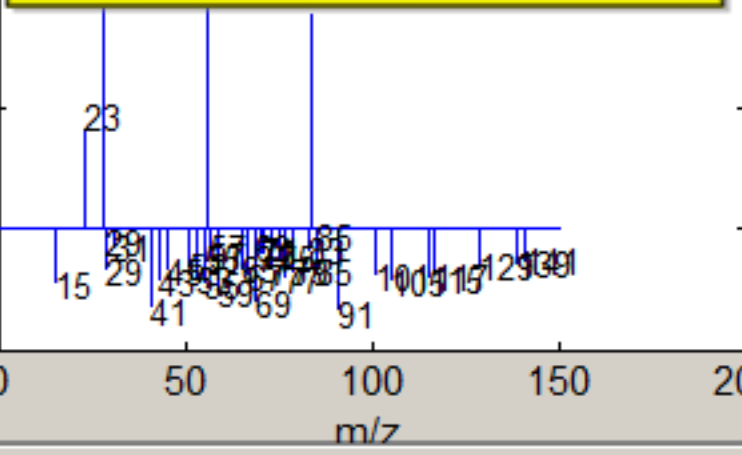
Change Colormap

10

Choose one...

Z scale factor = 1

To view the 3D volume press the 'View in 3D' button.



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84

50

100

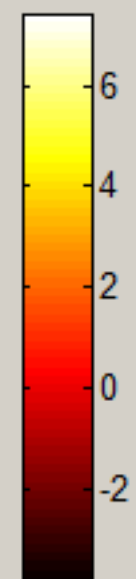
150

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250

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50 100 150 200 250

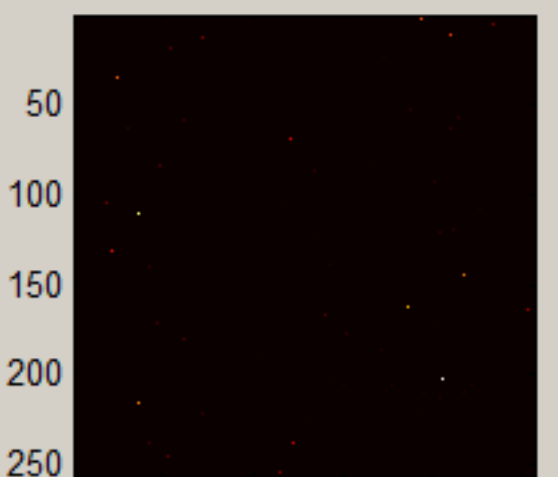


Layer number:

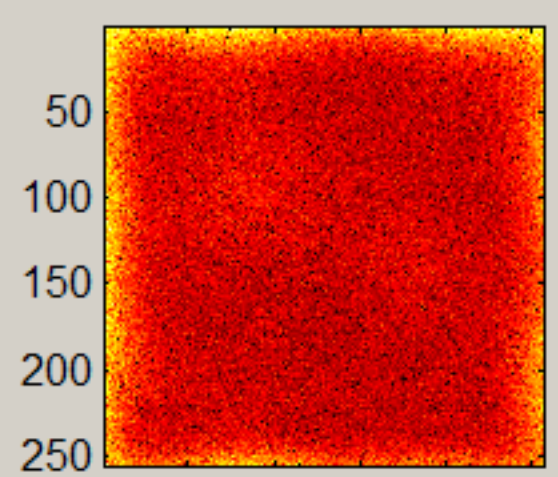
42

Positive Scores

Negative Scores (*-1)



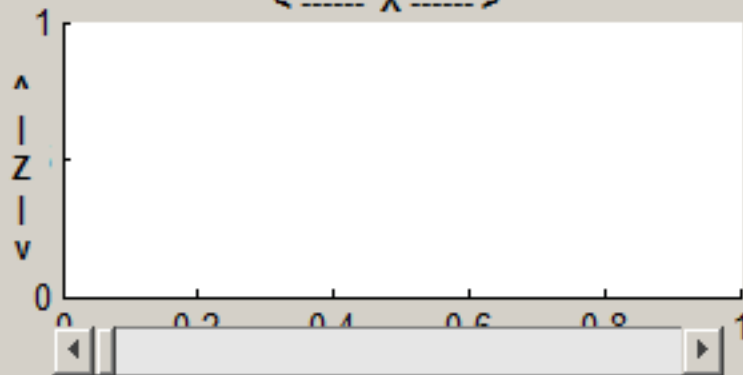
50 100 150 200 250



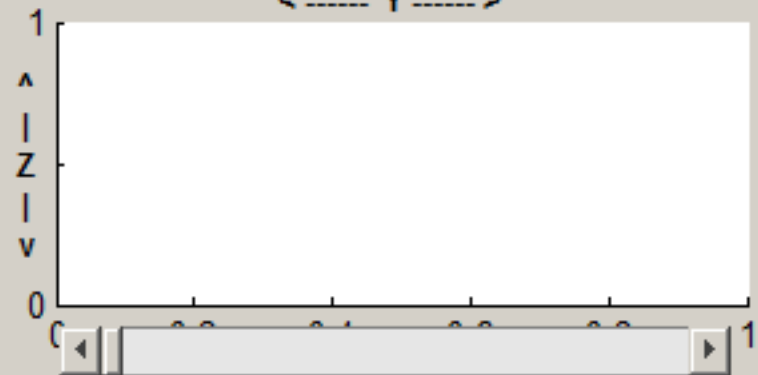
50 100 150 200 250

< ---- X ---- >

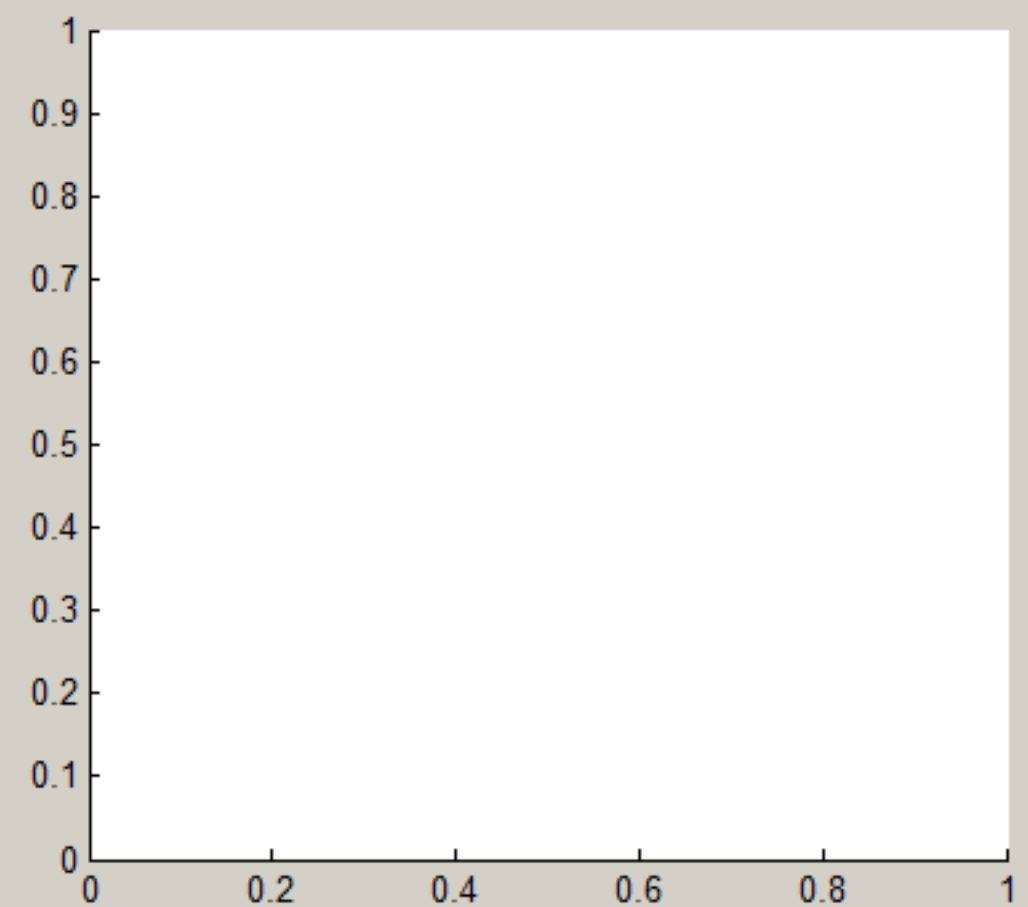
< ---- Y ---- >



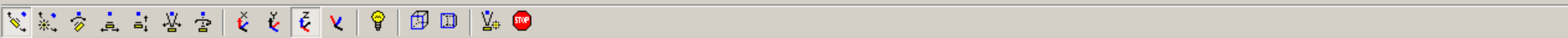
min row # 1 256



min row # 1 256



Close Panel



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snapshot

Change Colormap
10 Choose one...

Z scale factor = 1

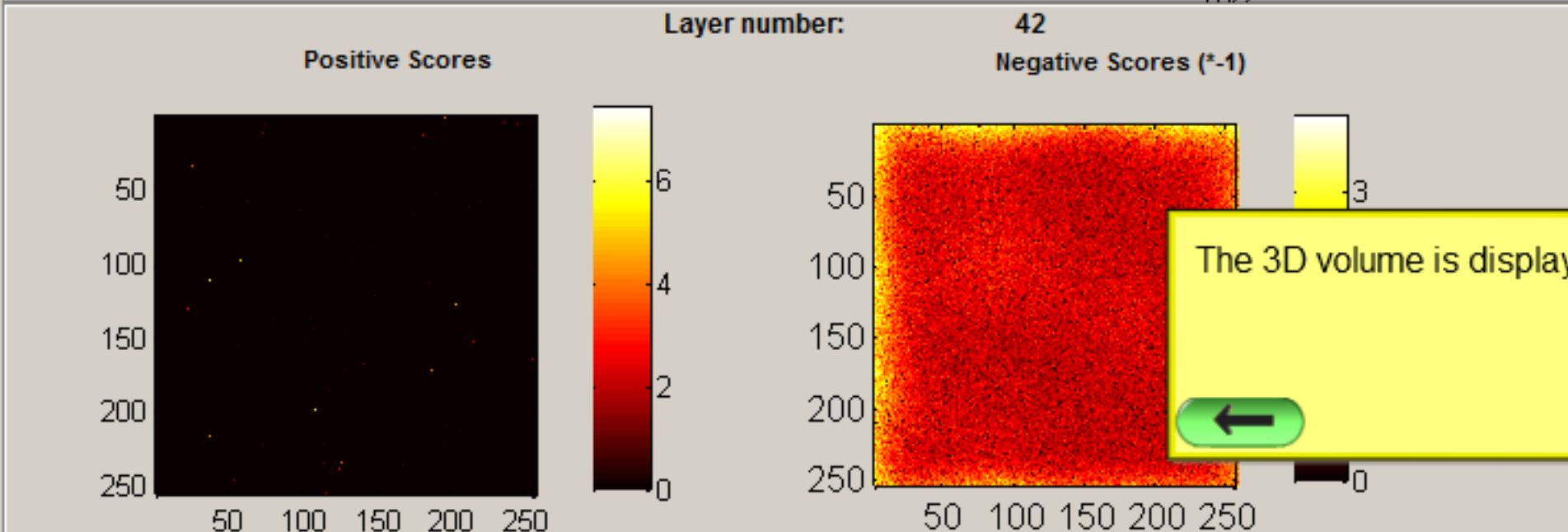
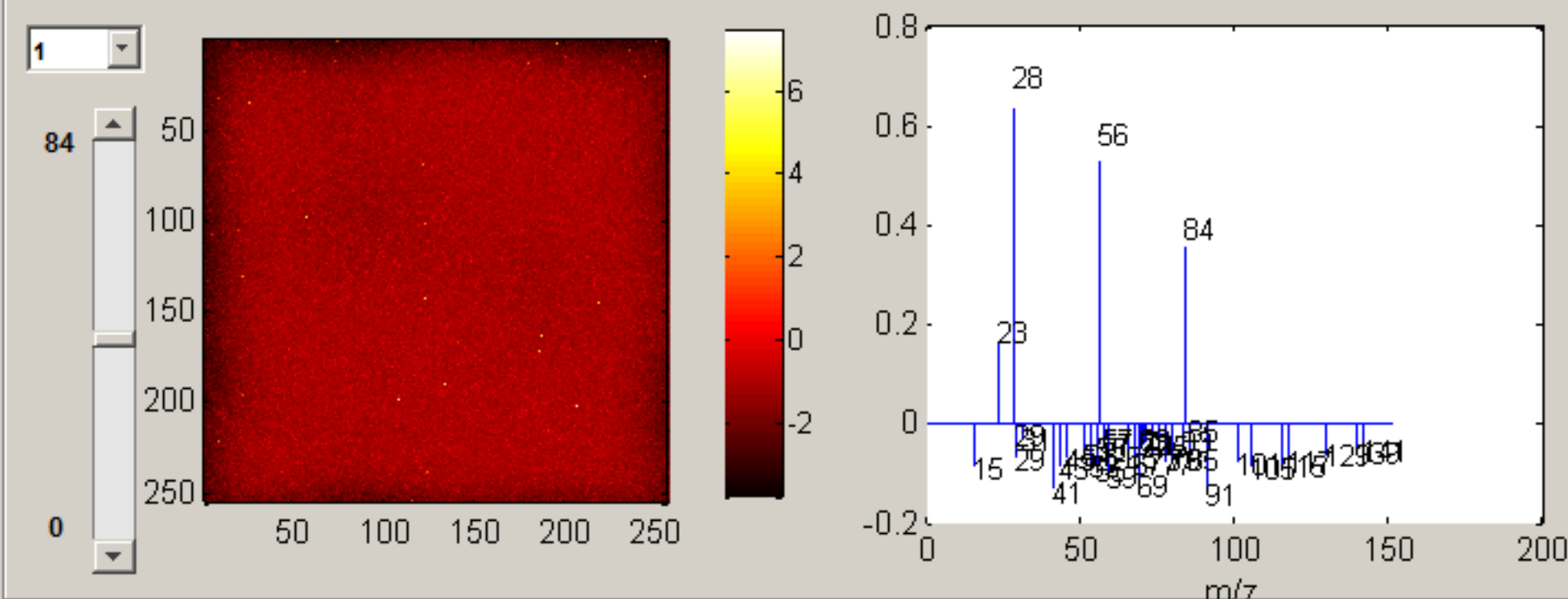
Check which axes you want to rotate around
☐ X ☐ Y ☐ Z

Number of degrees for rotation
[input field]

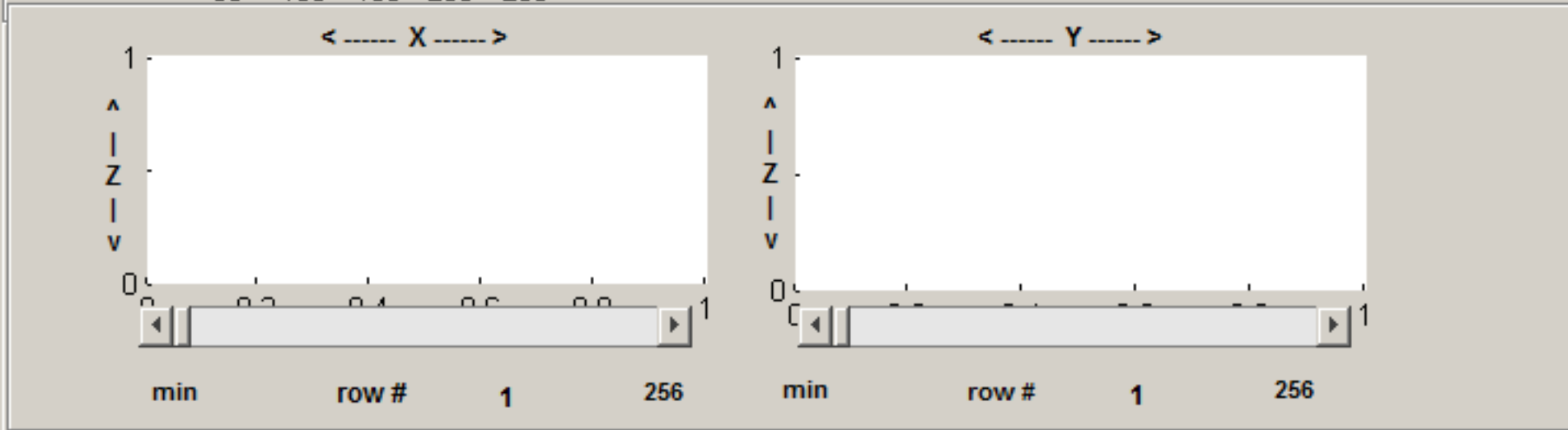
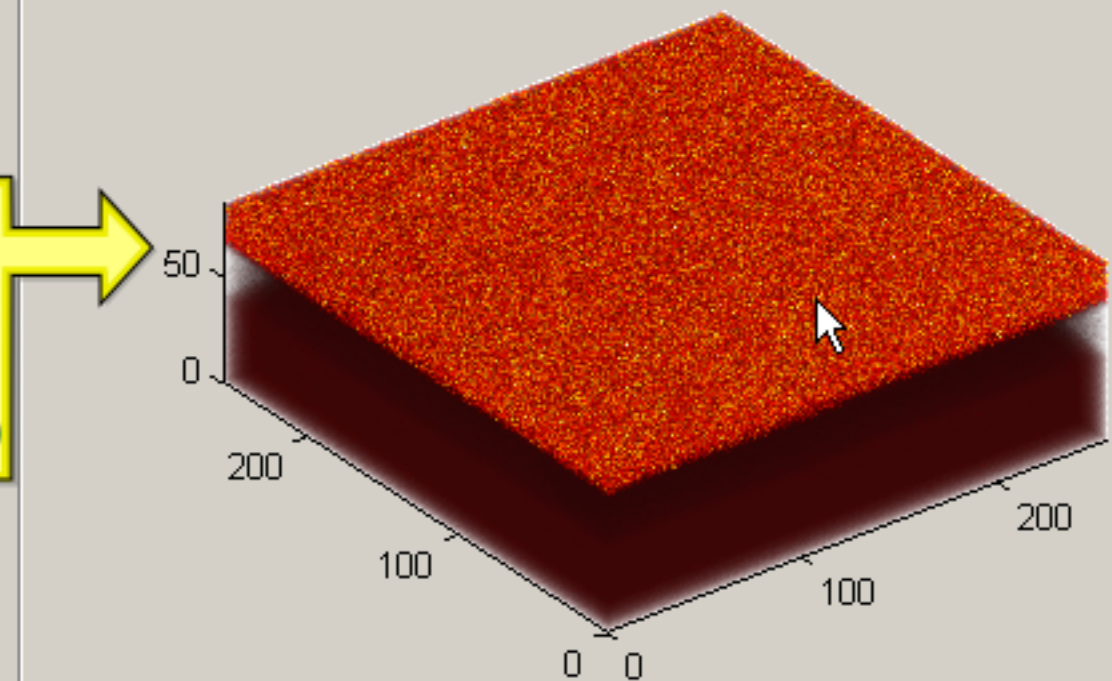
Preview

Create 3D Movie

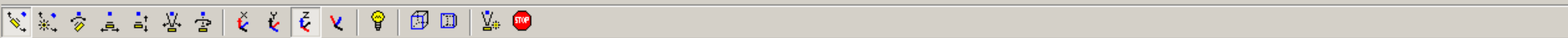
Unfold Scores



The 3D volume is displayed here.



Close Panel



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

Check which axes you want to rotate around

☐ X ☐ Y ☐ Z

Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores

View in 3D

View in 3D - Pos Scores

View in 3D - Neg Scores

Save Snapshot

Change Colormap

Choose one...

Z scale factor = 1

You can also view just the positive or just the negative scores by using these buttons.



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84

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100

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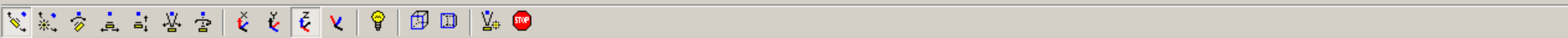
100

150

200

250

0



Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP

☐ Check Box To Smooth Data For Display

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snapshot

Change Colormap

Hot (Matlab Defa...

Z scale factor = 1

Check which axes you want to rotate around

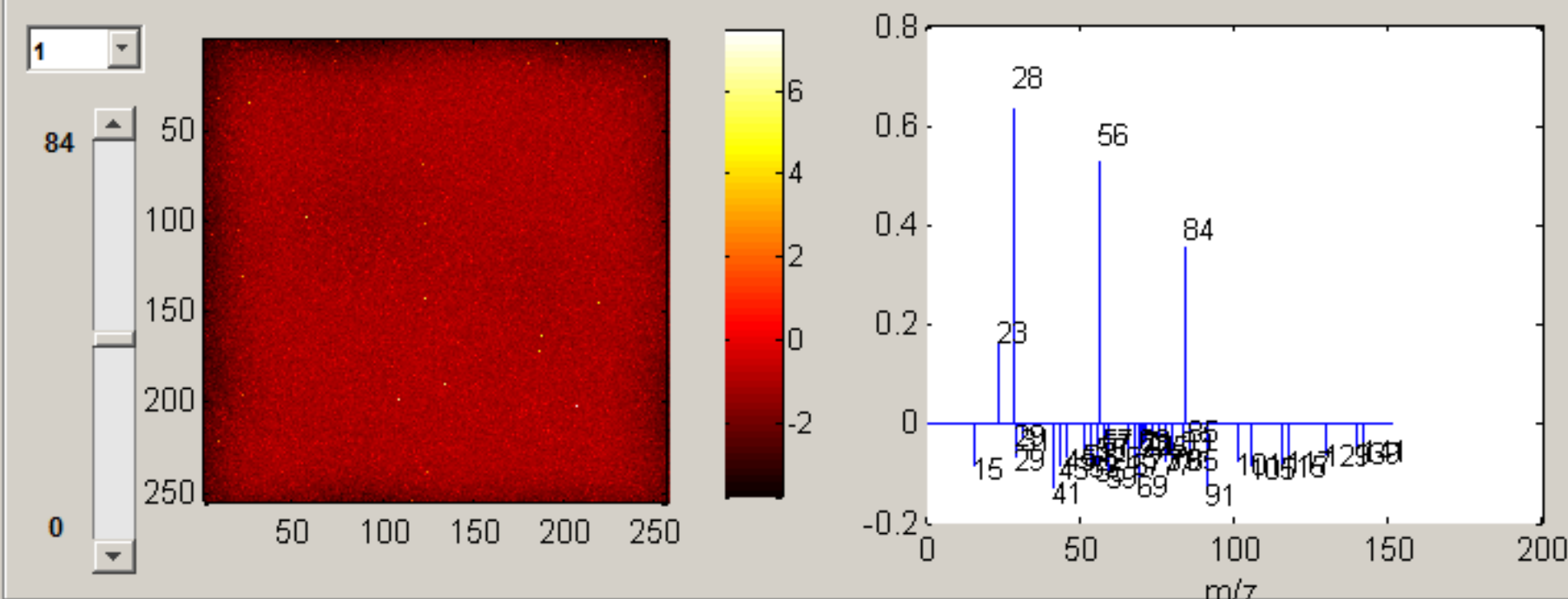
☐ X ☐ Y ☐ Z

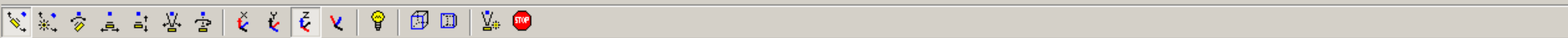
Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores



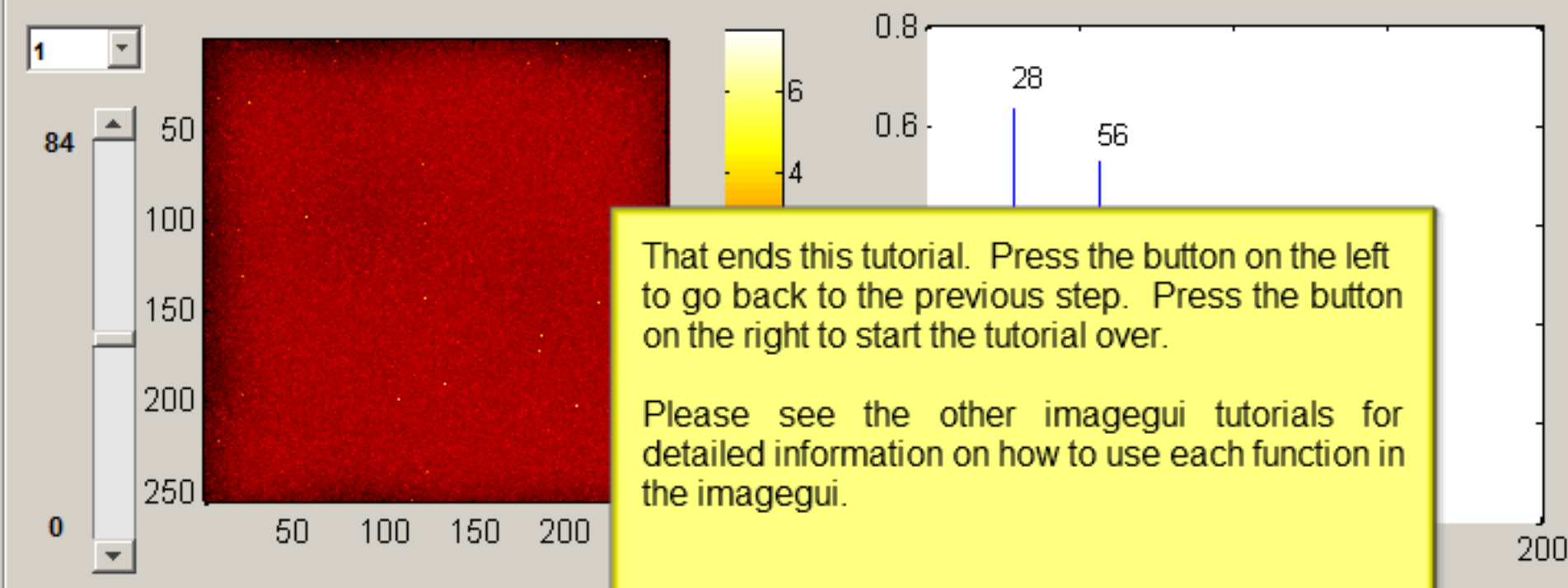


Prep 3D matrix

Poisson Scale - Mean Ce...

Run PCA on 3D data

Apply PCA from SDP



☐ Check Box To Smooth Data For Display

View in 3D

View in 3D - PosScores

View in 3D - Neg Scores

Save Snaпshot

Change Colormap

10 Hot (Matlab Defa...

Z scale factor = 1

Check which axes you want to rotate around

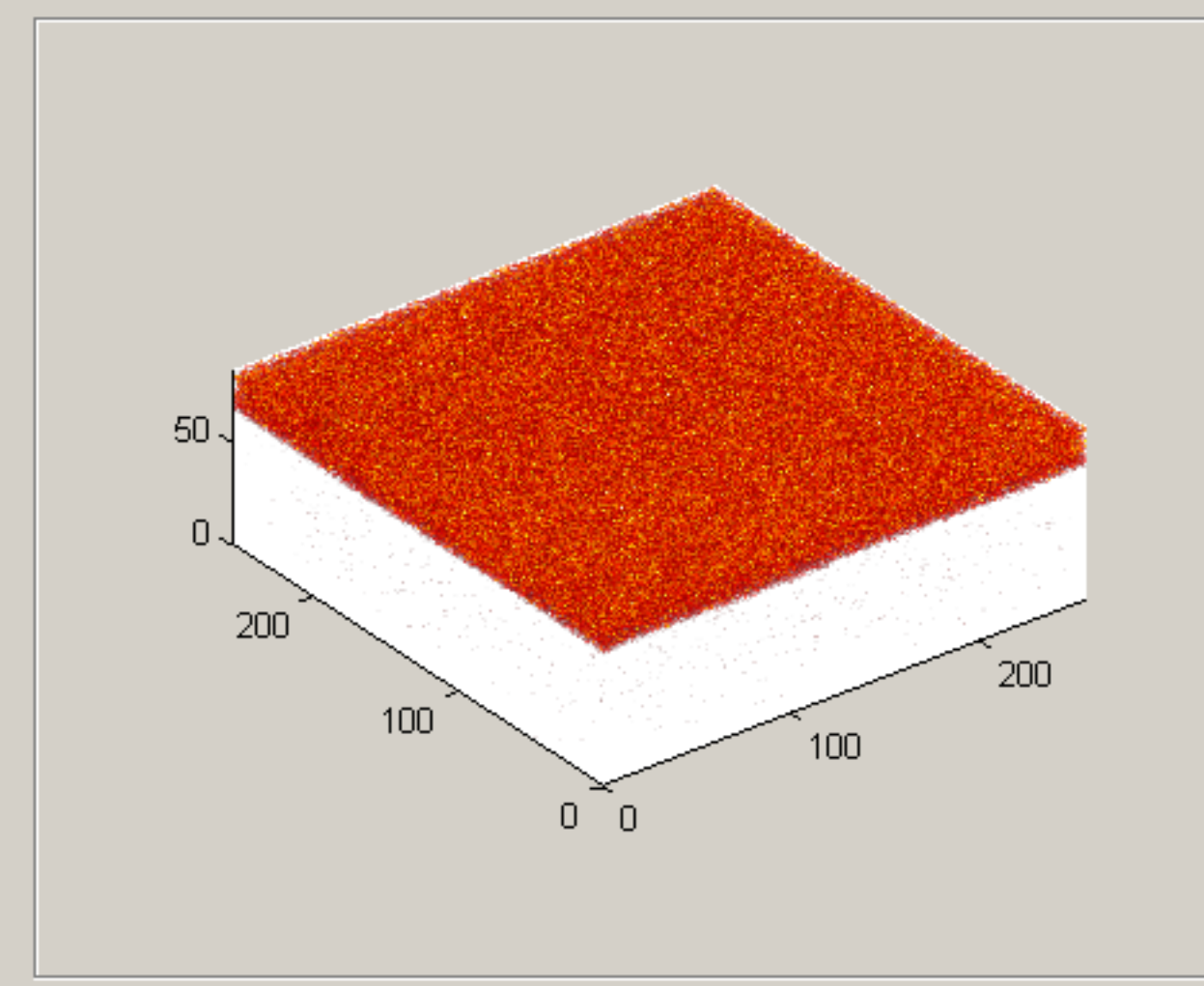
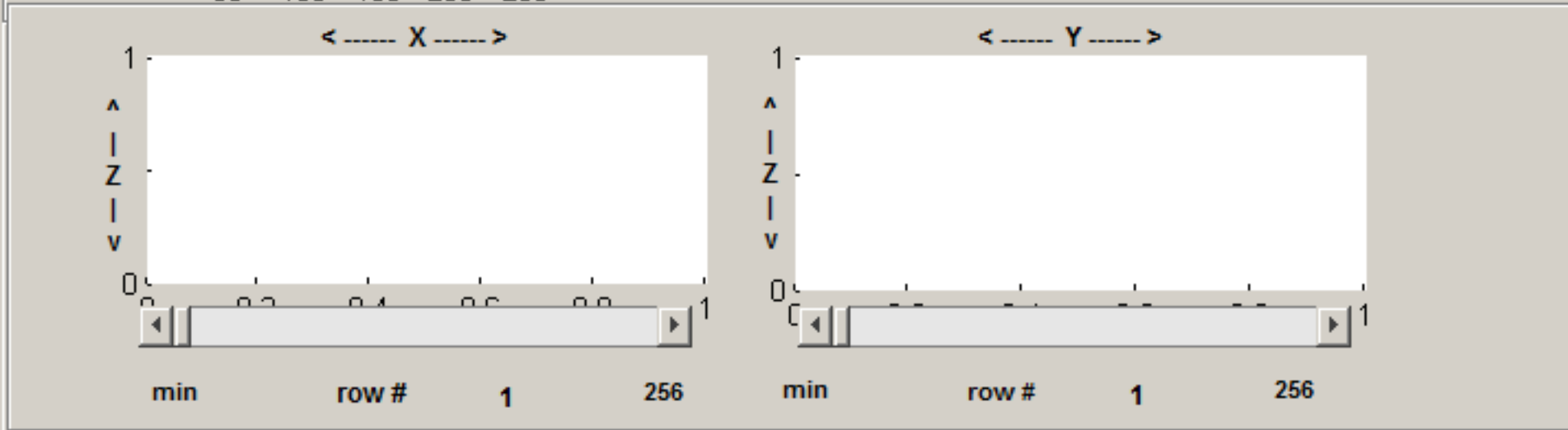
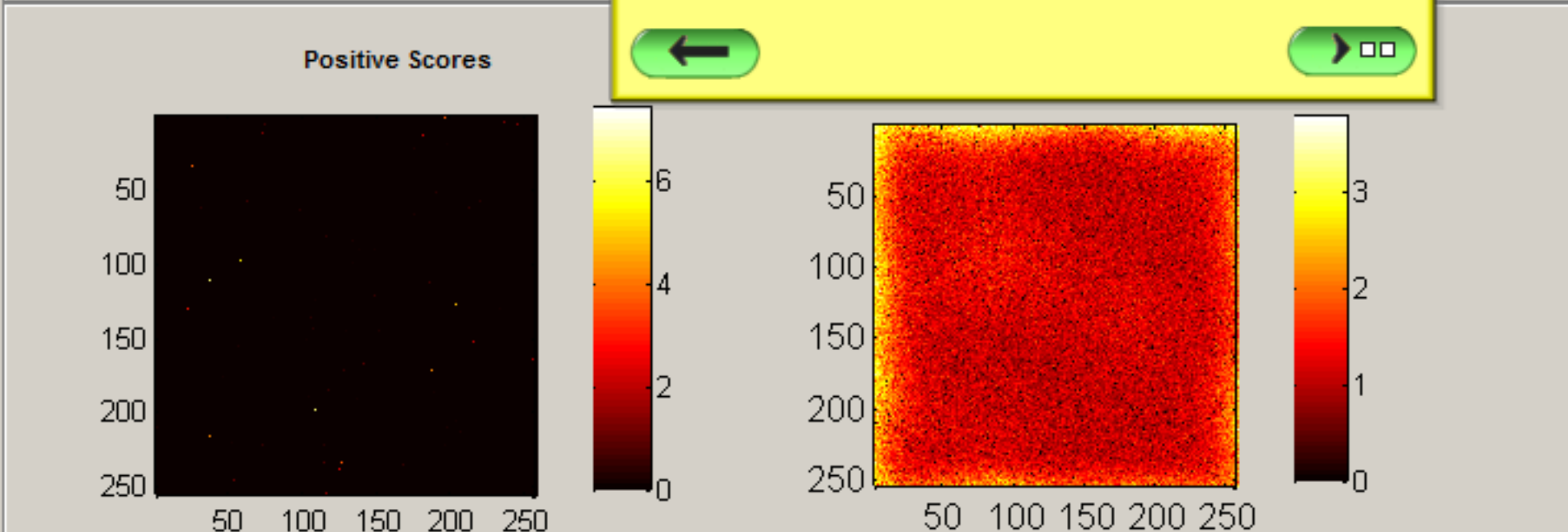
☐ X ☐ Y ☐ Z

Number of degrees for rotation

Preview

Create 3D Movie

Unfold Scores



Close Panel