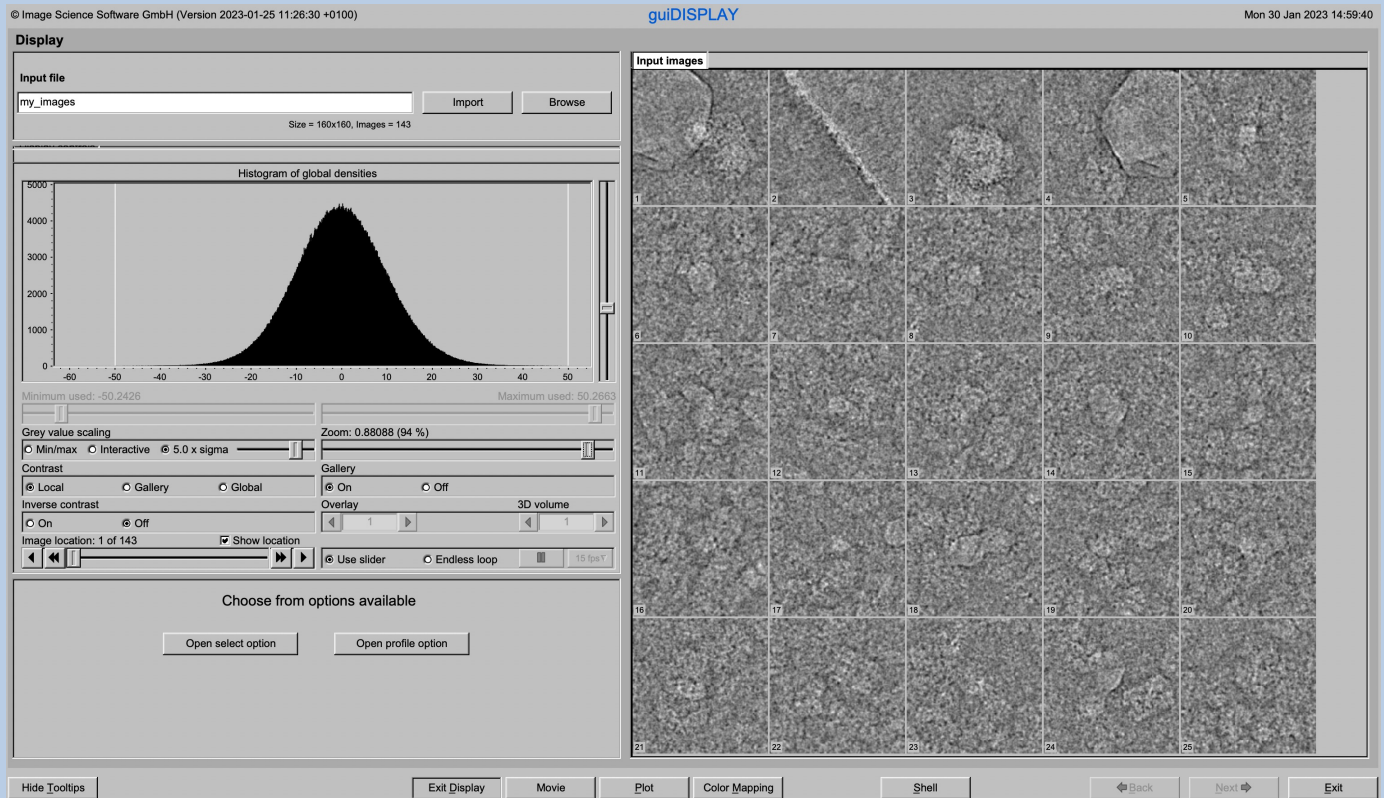




A Brief Introduction

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The IMAGIC guiDISPLAY program



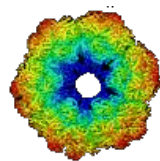
The **guiDISPLAY** program visualises image / 3-D volume stored in an IMAGIC or any 3DEM formatted image file.

This is a brief hands-on on how to use IMAGIC GUI oriented programs and how to work with **guiDISPLAY**:

CONTENT:

- IMAGIC GUI programs
 - **guiDISPLAY**
 - > The Display Page
 - > How to create a profile
 - > How to select images
 - > How to pick particles
 - Error hints
- How to use IMAGIC GUI programs
How to display images/3D volumes
- How to send us feedback





IMAGIC

GUI Programs



The Working Directory


If **guiDISPLAY** is called from the programs list, by using an icon or in a command line the working directory will be your default system directory.

If **guiDISPLAY** is called by an IMAGIC command in a terminal / command window

```
IMAGIC-COMMAND : guiDISPLAY
```

the working directory will be the directory used in this window.

If you want to change this directory use the “Exit Display” button

A rectangular button with a thin black border and a light gray background. The text "Exit Display" is centered in a black serif font, with a small underline under the letter 'i'.

to navigate to the “Start” page where you can specify the working directory of **guiDISPLAY**.

All output files will be stored in the working directory which you have specified on the start page.

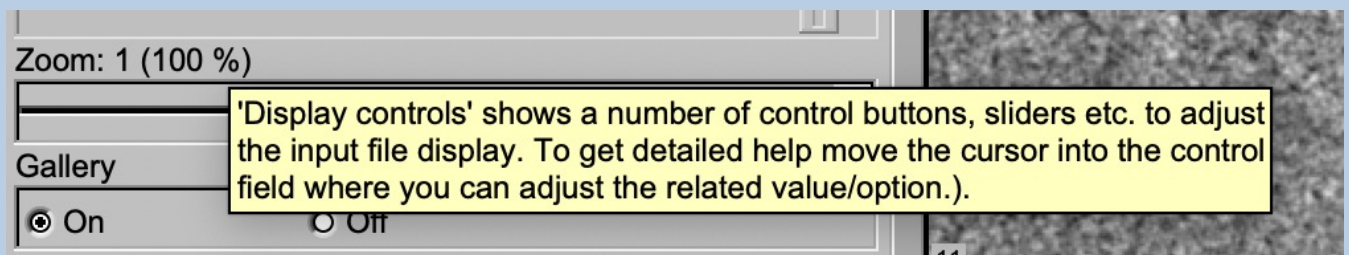
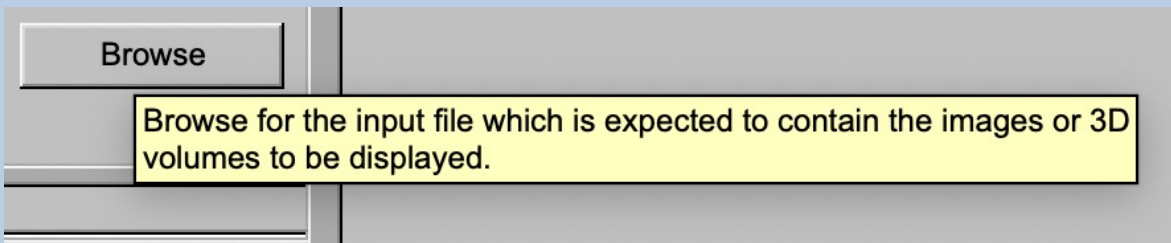
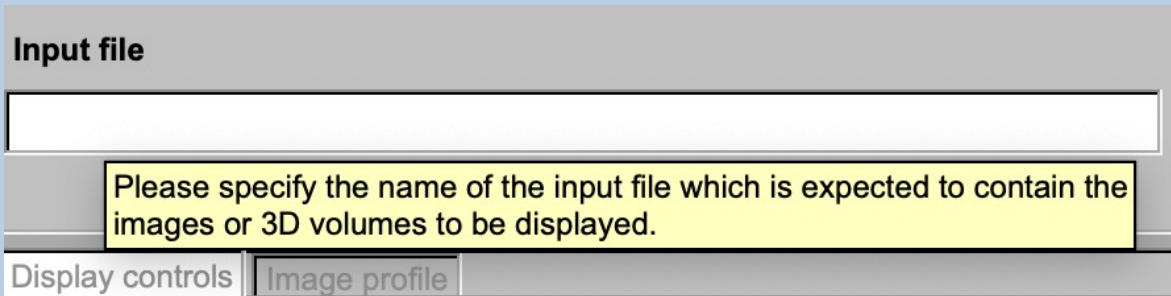
Input files can be chosen from other directories.

Click the “Display” button to return to the “Display” page.

A rectangular button with a thin black border and a light gray background. The text "Display" is centered in a black serif font, with a small underline under the letter 'i'.

Help

Move the cursor on (nearly) any item (questions, radio buttons, display windows...) shown on the pages and you will get context sensitive help.



The “Start” Page

guiDISPLAY starts with the “Display” page.

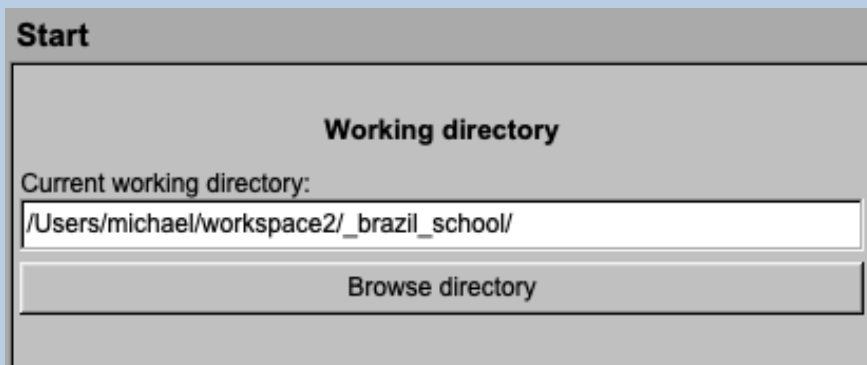
If you would like to adjust some **guiDISPLAY** programs setting before importing the images use the “Exit Display ” button to navigate to the “Start” page.

Exit Display



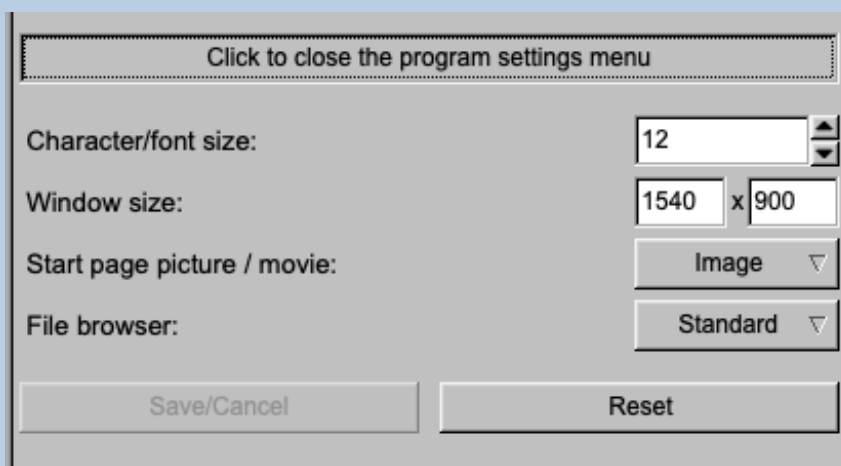
On the “Start” page you can set some program parameters:

a) the working directory

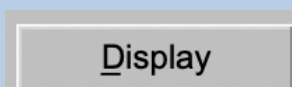


b) the size of the **guiDISPLAY** program windows and/or text (a re-start is needed)

c) the type of file browser



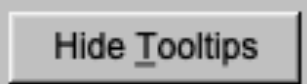
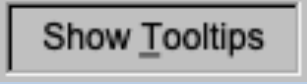

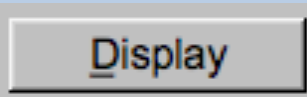
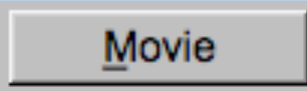
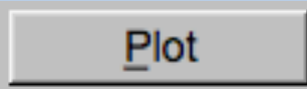
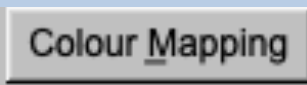
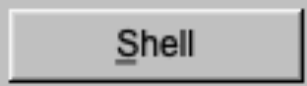
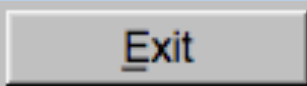
Having adjusted all setting use the “Display” button to navigate back to the “Display” page.



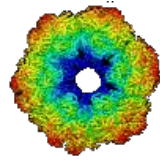
The Toolbar

There is a toolbar at the bottom of each **guiDISPLAY** page.

The toolbar buttons:

	Show or hide the context sensitive tooltips (the help text may sometimes disturb)
	
	Go to the “Start” page
	Go back to the DISPLAY page
	Open a MOVIE page (display in an endless loop). Refer to guiDISPLAY
	Open a PLOT page to show IMAGIC curves. Refer to guiPLOT
	Open a DISPLAY page to visualize IMAGIC images using a colour map stored in another input.
	Run a shell / terminal page. command
	Exit guiDISPLAY



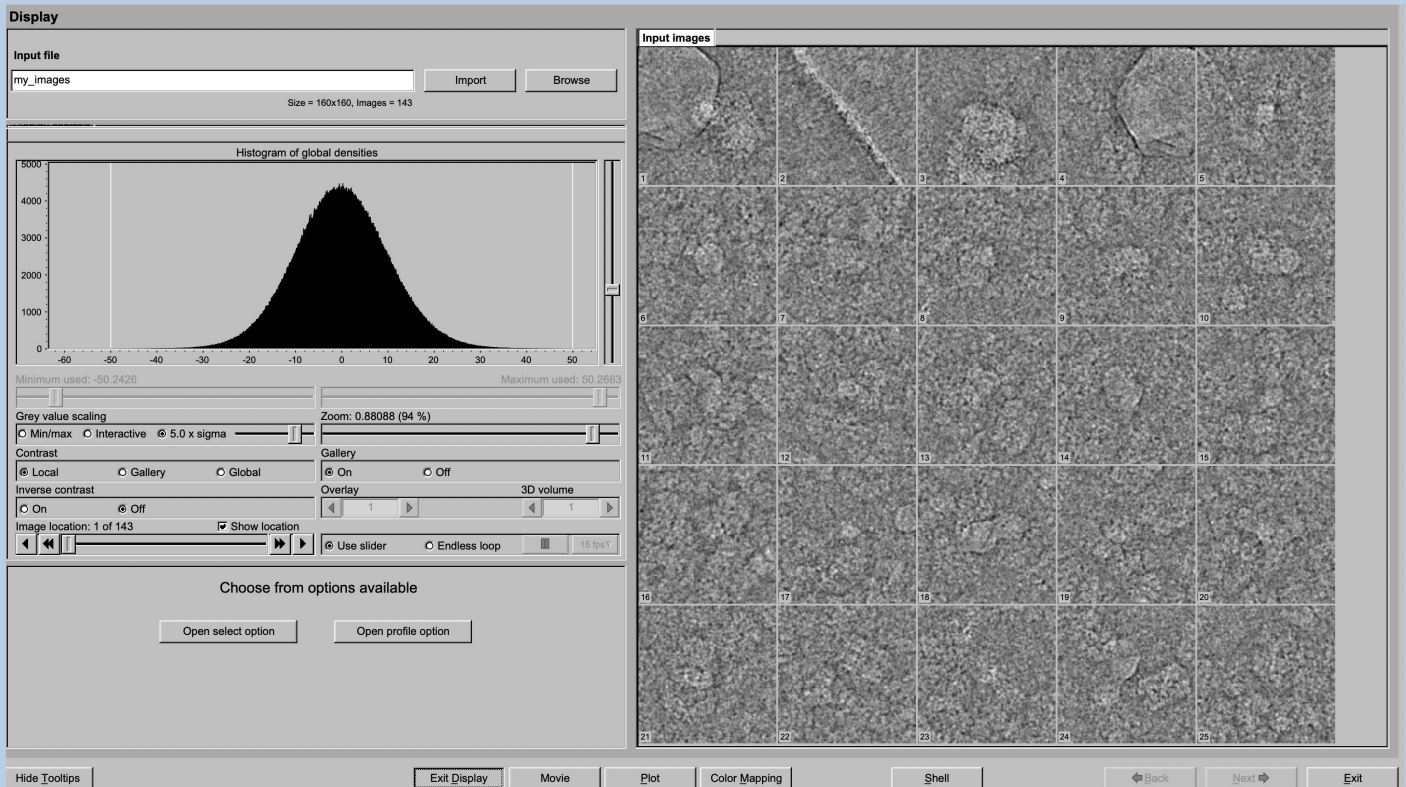


IMAGIC

guiDISPLAY



The “Display” page



On the left-hand side you can specify the input file and adjust the display parameters. The images are displayed in the window on the right-hand side.

First specify the name of the file with the images to be displayed. Either enter the name of the file into the text field

Input file

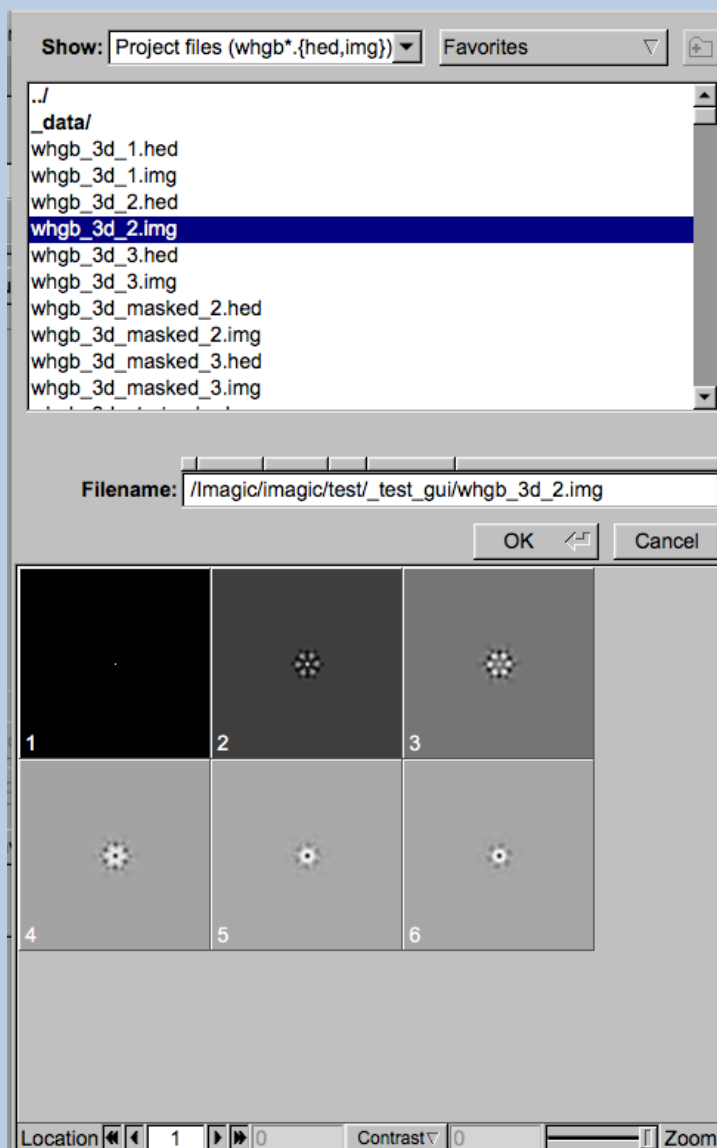
/Users/michael/workspace2/_brazil_school/my_images

or use the “Browse” button to browse for an IMAGIC image file.

Browse

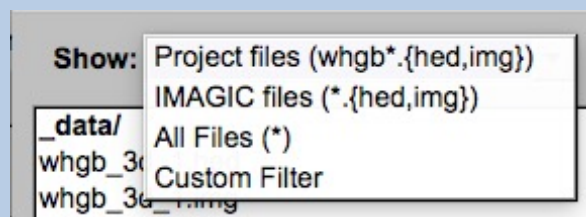


Clicking the “Browse” button will open the IMAGIC file chooser:

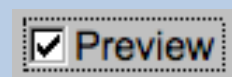


Choose the wanted file by clicking its name

You can use a pre-selection of the files shown:

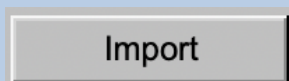


If the images are in IMAGIC format you can get a pre-view of the images.



Note that you can store your directory in “Favorites”.

If the input file is in an IMAGIC but a 3DEM file use the “Import” button to create an IMAGIC image file. Note that a separate “EM2EM” window will open to calculate this conversion.

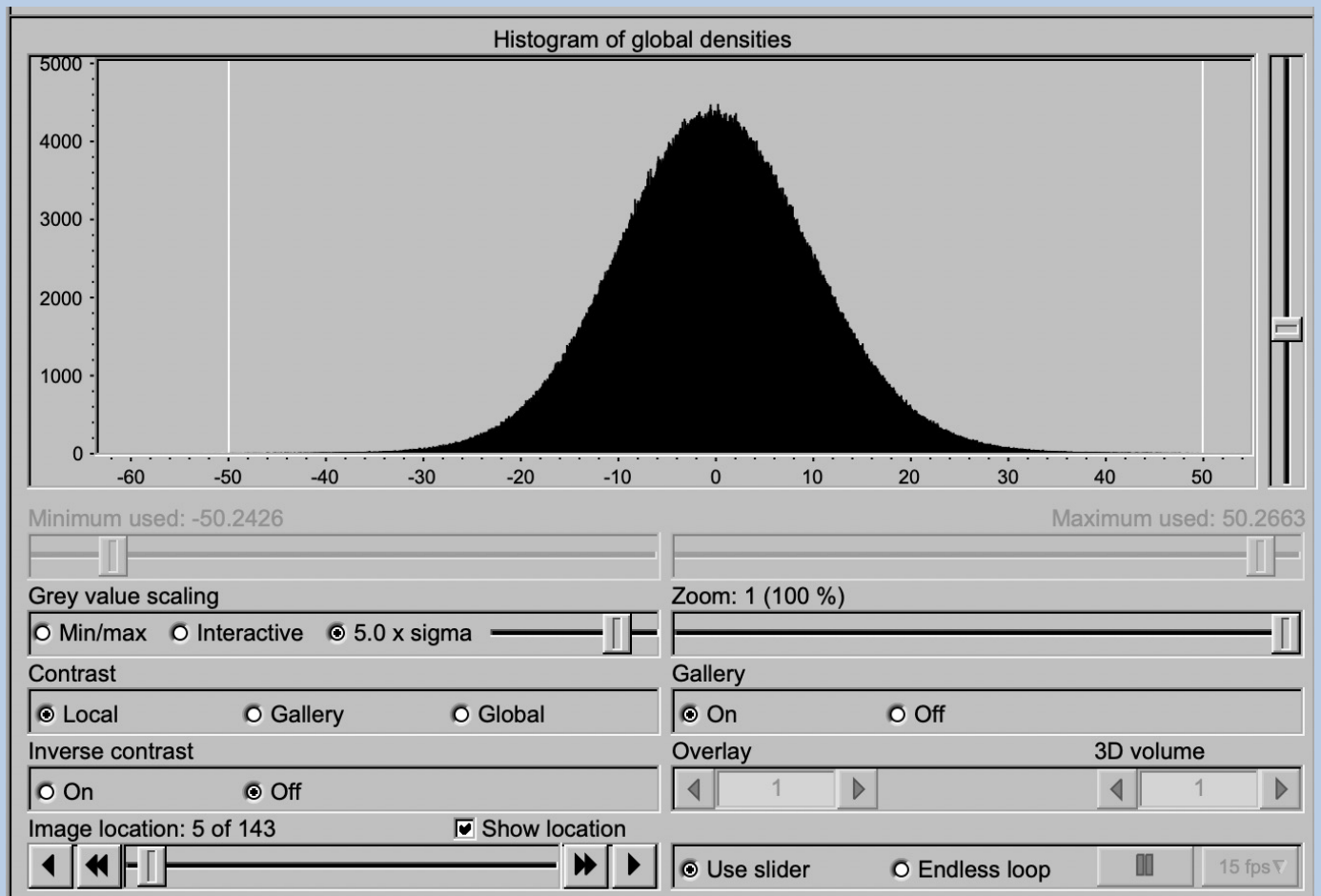


Refer to the “guiEM2EM manual” for further help.



Display Control

The visualisation settings of the images shown on the right-hand side can be adjusted on the left-hand side



To get a feeling about the image densities you will usually click the “Calculate histogram” button

Calculate histogram

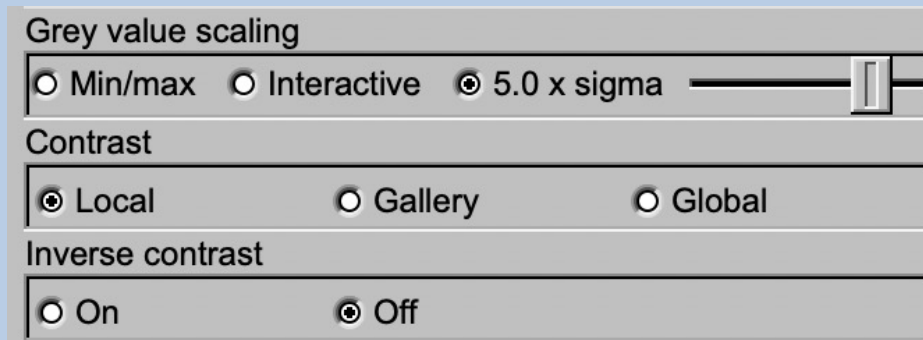
to calculate a histogram of the global (all images) density distribution.

If the curve does not fit the window you can use the slider on the left-hand side of the histogram display to adjust the vertical scaling.



The various display options are described in the following:

CONTROLS TO ADJUST THE CONTRAST



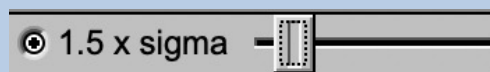
GREY VALUE SCALING



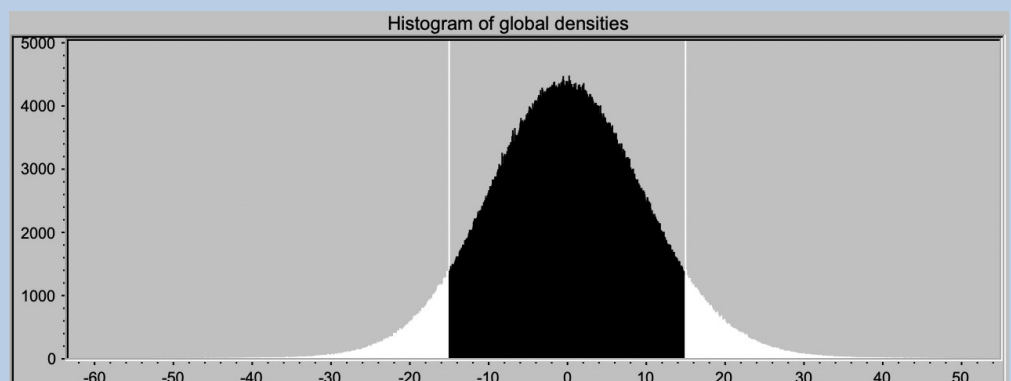
Options are:

Minmax: Scale the grey-values to the minimum/maximum

N times sigma: Use an amount of sigma to set the scaling limits
Use the slider to change the value of N



Have a look at the histogram to check the limits



Interactive: Set the limits by giving numbers



HOW TO CALCULATE THE GREY VALUE SCALING:



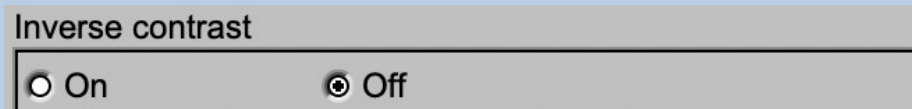
Options are:

Local: Scale the grey-values in each image separately

Gallery: Scale the grey-values using the currently displayed images

Global: Scale the grey-values using all image densities in the input file (relates to the "Global histogram")

INVERSE CONTRAST:



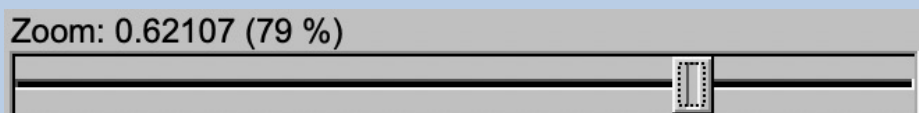
Options are:

On: Inverse the contrast, Black will be white and vice versa,

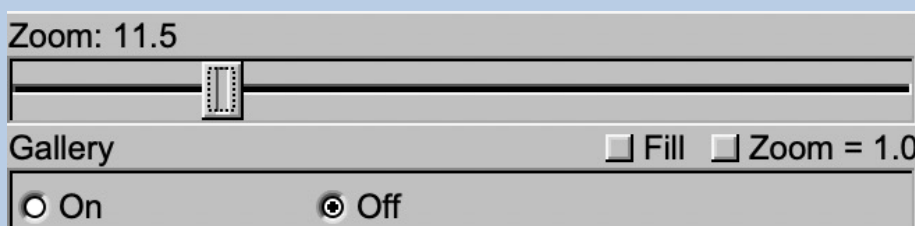
Off: No changes

ZOOM:

Enlarge or reduce the displayed images. Use the slider to change the zoom factor.

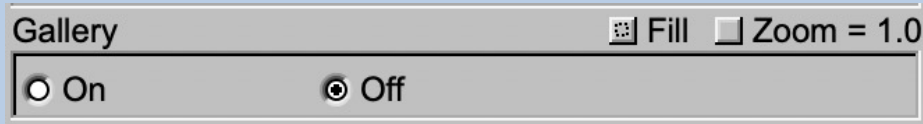


Note that in "Gallery: On" the maximal zoom factor is 1. Larger zoom factors are only possible in mode "Gallery: off"



Note: In mode “Gallery off) you can click the “Zoom = 1.0” button to visualise the image 1:1 or you can click the “Fill” button to enlarge the images to fit the display window.

GALLERY - NUMBER OF IMAGES DISPLAYED:

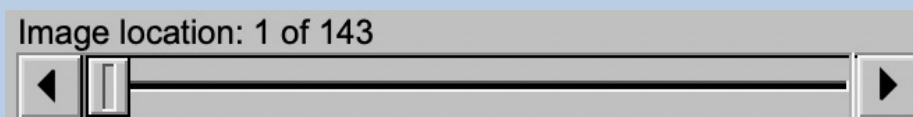


Options are:

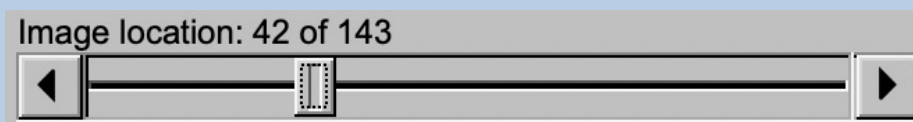
On: Display a gallery of images

Off: Display only a single image

IMAGE LOCATION – WHICH IMAGES ARE TO BE DISPLAYED:

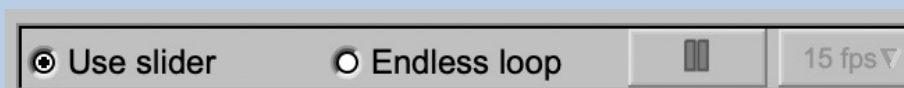


Use the slider or the arrows to select the (first) image to be displayed in the display window on the right-hand side.

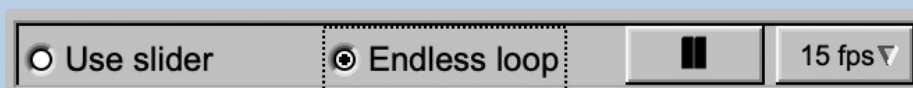


DISPLAY OR MOVIE:

Images can be displayed using the slider (usual display)



or in an endless loop (movie):

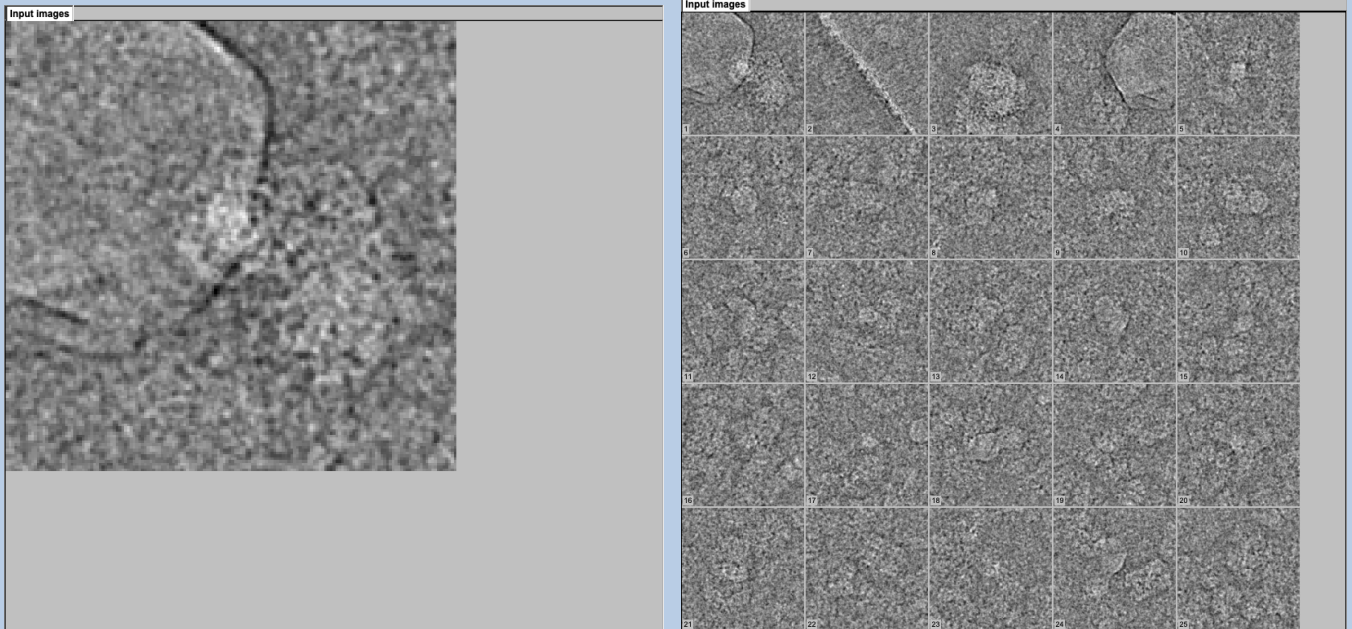


The movie can be stopped by clicking , the speed of the movie can be adjusted using the button “fps” (frames per second) .



Display Window

The image(s) are displayed in the window at the right hand side either as a single image or as a gallery of images.



Moving the cursor into the display window there are a few options:

- New window** Open the display window a larger separate display window
- Save** Save the current displayed image or gallery in JPG image
- Save all** Save the whole window in JPG image



Display Option “Profile”

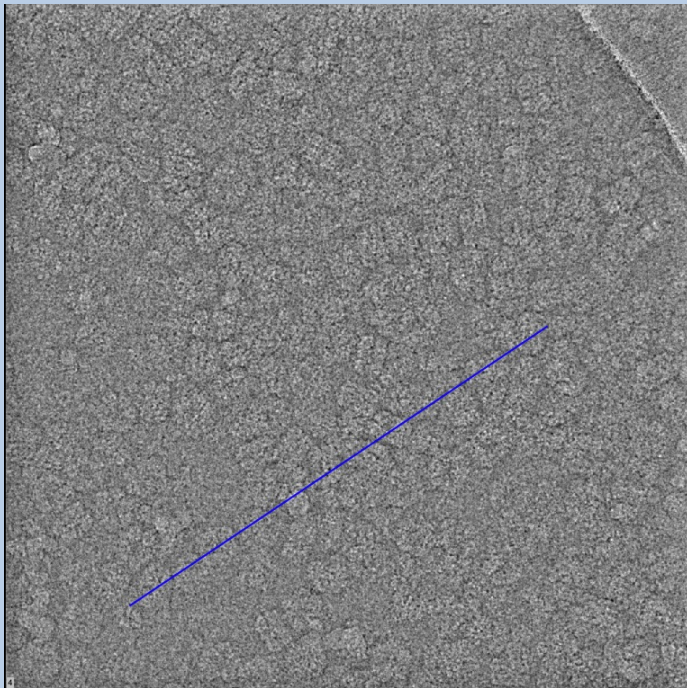
Get the “Profile” mode by clicking the button “Open profile option”:

Open profile option

Return to the usual display by clicking the “Exit profile option”:

Exit profile option

Move the cursor into the wanted displayed image and mark the line along which the profile is to be shown:



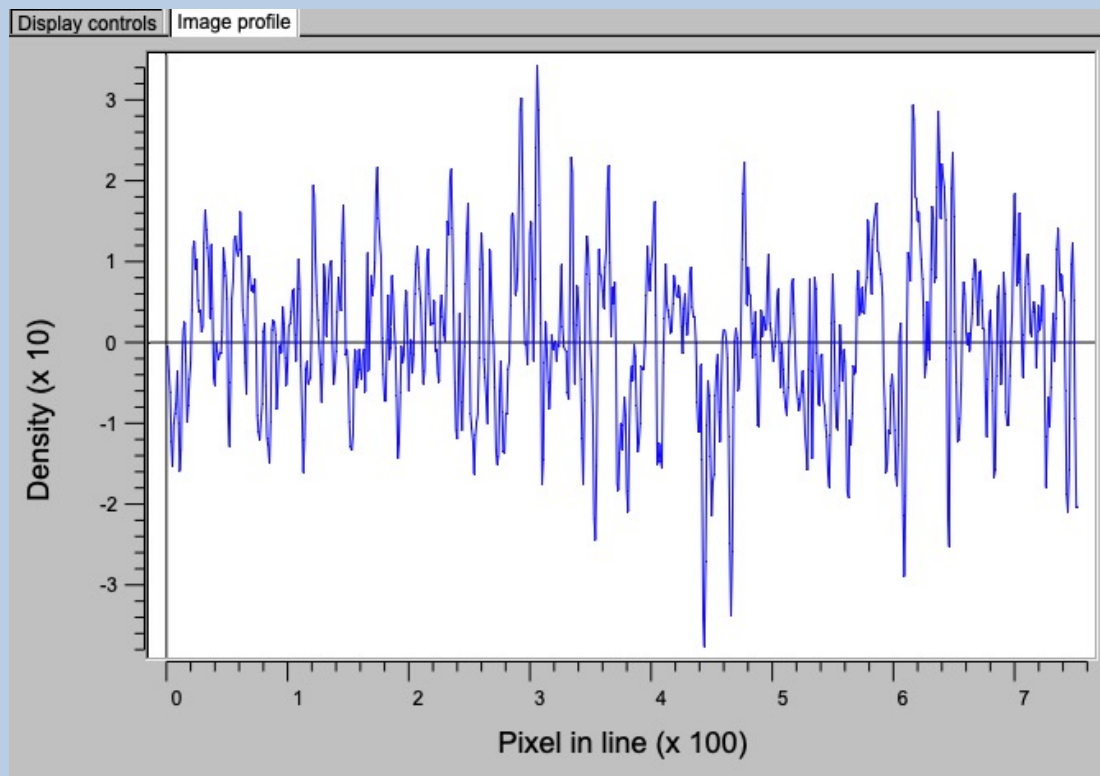
You can also specify the profile line by specifying the coordinates of the start and end point and the image location number:

Start	End	Location	
<input type="text" value="900"/> X	<input type="text" value="482"/> X	<input type="text" value="4"/> First	<input type="button" value="Update profile"/>
<input type="text" value="185"/> Y	<input type="text" value="809"/> Y	<input type="text" value="4"/> Last	

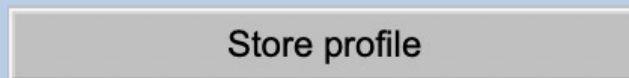
Click the button “Update profile” to get the new profile



The profile is shown in the “image profile” tab.



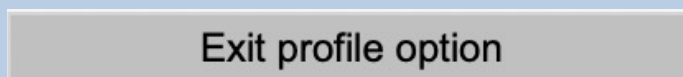
If wanted you can store the profile in an IMAGIC PLT file:



You have to specify the name of this PLT file:

Output PLT file

Return to the usual display by clicking the “Exit profile option”:



Display Options “Select”

Get the “Select” options by clicking the button “Open select option”:

Open select option

Return to the usual display by clicking the “Exit select option”:

Exit select option

SELECT PARTICLES:

SELECT

Particles/Coordinates

Images/Locations

Specify the name of the output file to store the chosen coordinates:

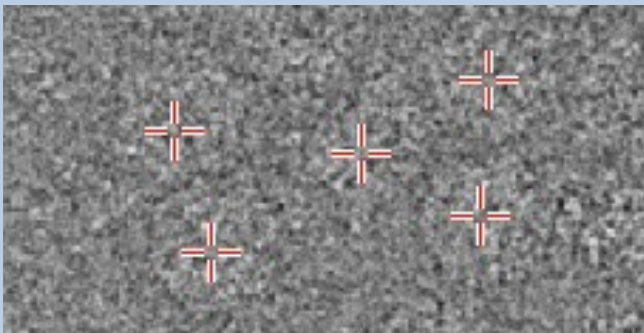
Output PLT file

my_images_coordinates.plt

You can load the content of an already existing coordinates file in case you want to continue picking particles/storing coordinates:

Load particles/coordinates

Move the cursor into the displayed image on the right-hand side and click into the centre of the wanted particles:



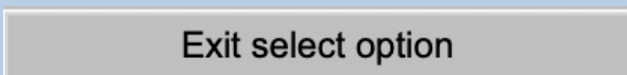
Select particles for all images (image locations). To store the chosen coordinates click the button “Store particles/coordinates”.



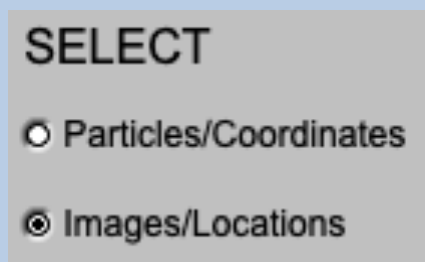
If “Display” was called in an IMAGIC GUI program with all IMAGIC commands available you can use the button “CUT-IMAGE” to open the IMAGIC command to extract the selected particles:



Return to the usual display by clicking the “Exit select option”:



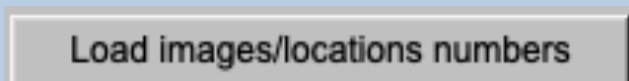
SELECT IMAGES (IMAGE LOCATIONS):



Specify the name of the file to store the chosen image (location) numbers:

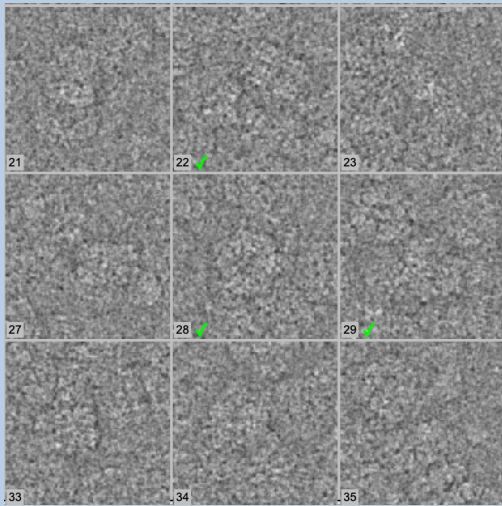


You can load the content of an already existing locations file in case you want to continue selecting images (image locations):



Move the cursor into the displayed image on the right-hand side and click into the wanted image:





Select images for all galleries.. To store the chosen images (location numbers) click the button “Store images/locations”.

Store images/locations numbers

If “Display” was called in an IMAGIC GUI program with all IMAGIC commands available you can use the button “EXTRACT-IMAGES” or “EXCLUDE-IMAGES” to open the IMAGIC command to extract the selected images:

EXTRACT-IMAGES

EXCLUDE-IMAGES

Return to the usual display by clicking the “Exit select option”:

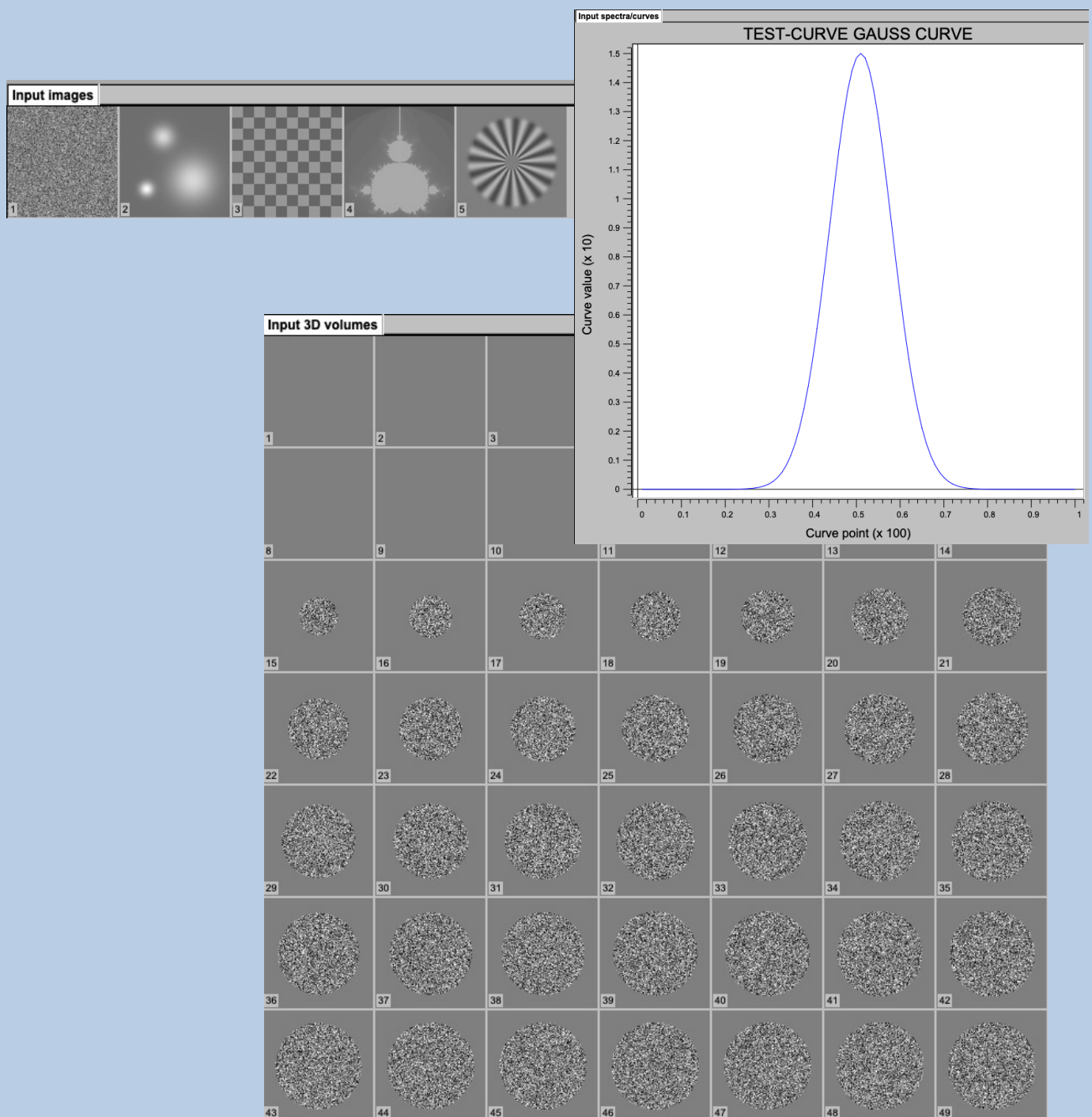
Exit select option

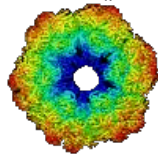


Dimensions

In the previous pages **guiDISPLAY** was described for images.

But input can also be curves/spectra/1D image or 3D volume(s) files. In this case the pages are modified for the other dimension but the content and the use of the pages are the same or similar.





IMAGIC

guiDISPLAY

Feedback / Error hints

We intensively tested the **guiDISPLAY** program and tried to find all possible errors and inconsistencies. But the current program is very complex and still in progress. So you may still find some problems.

We are happy to get feed-back. Please send your comments, error hints etc. to

imagic@ImageScience.de

THANK YOU VERY MUCH.



Image Science

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