



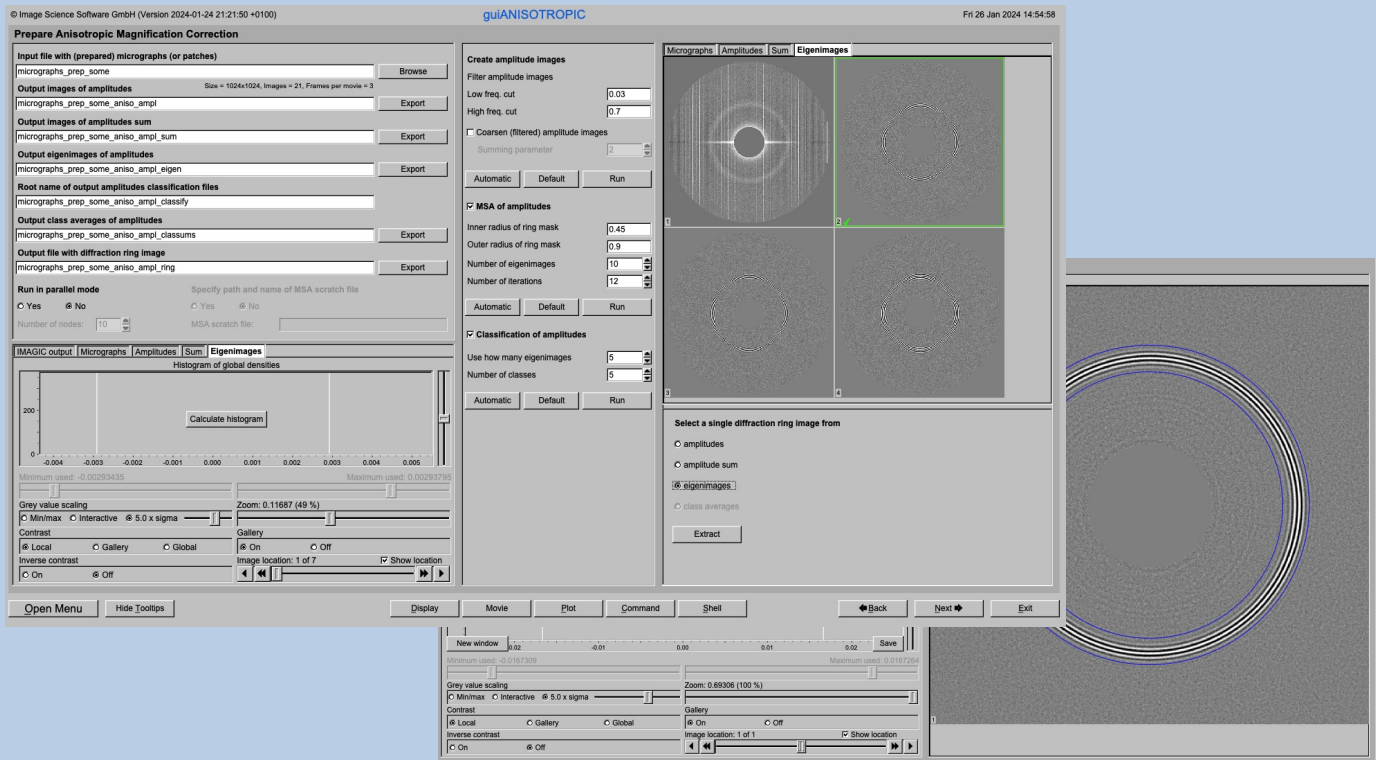
gui
ANISOTROPIC

**Correct
Anisotropic Magnification**

A Brief Introduction

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www.ImageScience.de
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The IMAGIC guiANISOTROPIC program



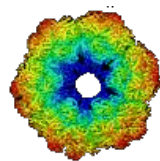
The **guiANISOTROPIC** program follows a work-flow from Import Micrographs to anisotropic magnification correction.

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

CONTENT:

- IMAGIC GUI programs
 - **guiANISOTROPIC**
 - > Import Micrographs
 - > Prepare Correction
 - > Correction
 - Error hints
- How to use IMAGIC GUI programs
- How to correct micrographs
- How to send us feedback





IMAGIC

GUI Programs

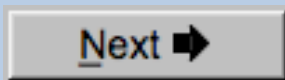


Workflow

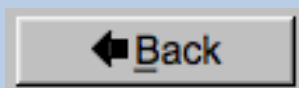
The idea of **guiANISOTROPIC** is to guide you through a typical anisotropic magnification correction.

The workflow consists of several pages. Each page will perform a specific image processing step.

If the calculations are finished the results are shown and you can press the “Next” button to continue with the next page.



Of course, there is also a “Back” button. But be careful: when leaving a page the results shown on the page may get lost and when coming back you might have to do the calculations once more to get the results printed. The output files do not get lost, of course.



The Working Directory

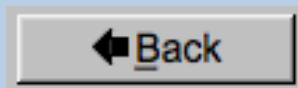
If **guiANISOTROPIC** is called from the programs list, by using an icon or in a command line the working directory will be your default system directory.

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

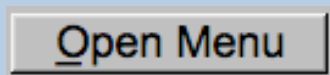
```
IMAGIC-COMMAND : GUI-ANISOTROPIC
```

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

If you want to change this directory use the “Back” button(s)



or the “Open Menu” button



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

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.



Help

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

Output file:

whgb_micrograph

Name of the output IMAGIC file containing the imported micrographs.

Note that the name of this output file will be created automatically.

Select format ▼

In case of type conflicts

Select the input file format.

Note: Currently only TIFF and MRC files can be imported.

MRC:
This is one of the oldest image formats in use in electron microscopy. One of the philosophies behind this data format is that it is compatible to the CCP4 format in use in X-ray crystallography.

TIFF (Tagged Image Format):
This has become one of the standard formats in desk-top publishing oriented image processing.



Input Files

Usually the input files on each page are output file(s) from the previous page(s) and are suggested automatically.

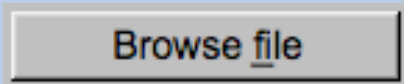
You can, of course, always use other input files names and even use other input directories.

Input file with (raw) micrographs	Browse file
my_micrographs	

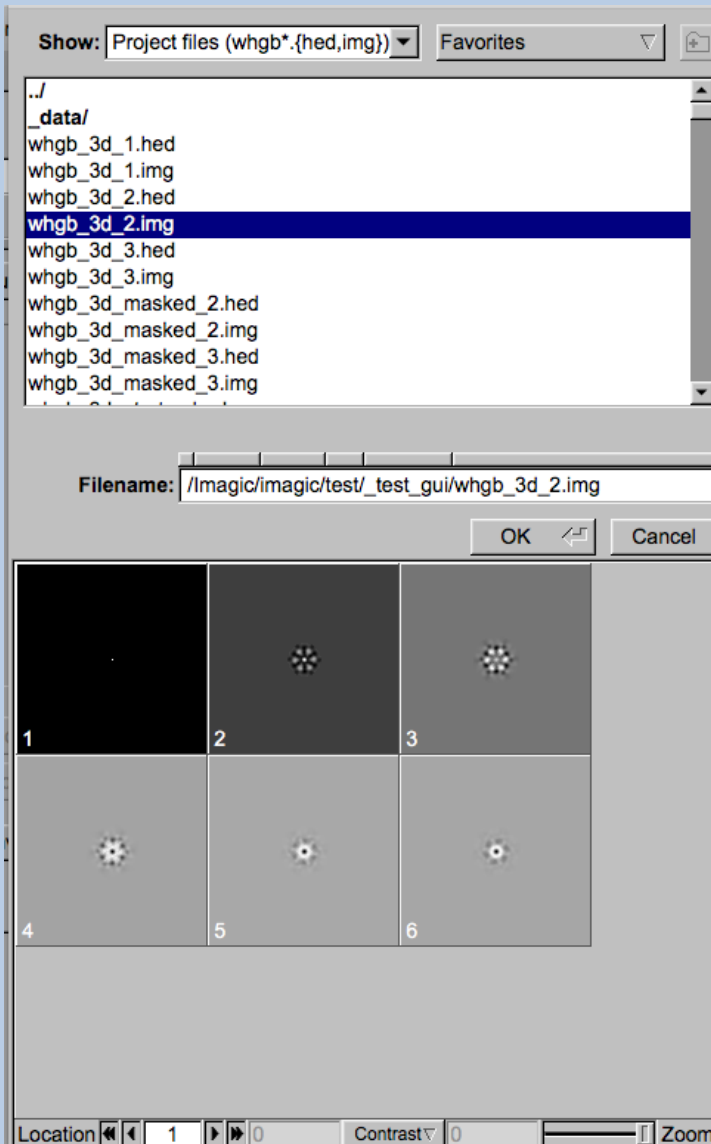


Input File Chooser

In most of the pages you are asked for input file(s) and you will find a “Browse file” button:

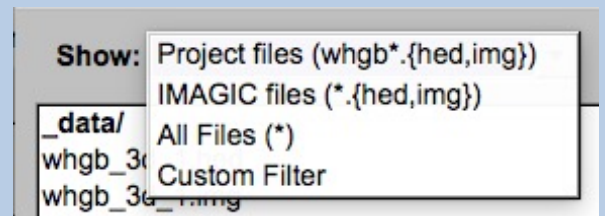


Pressing this button will open the IMAGIC file chooser:

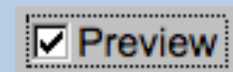


Choose the wanted file by clicking its name

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”.



Output Files

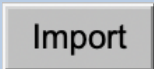
Usually the names of the output files are suggested but it is your choice, of course. On each page you can specify these output file names on the left hand side.

Output file	Export
my_micrographs	

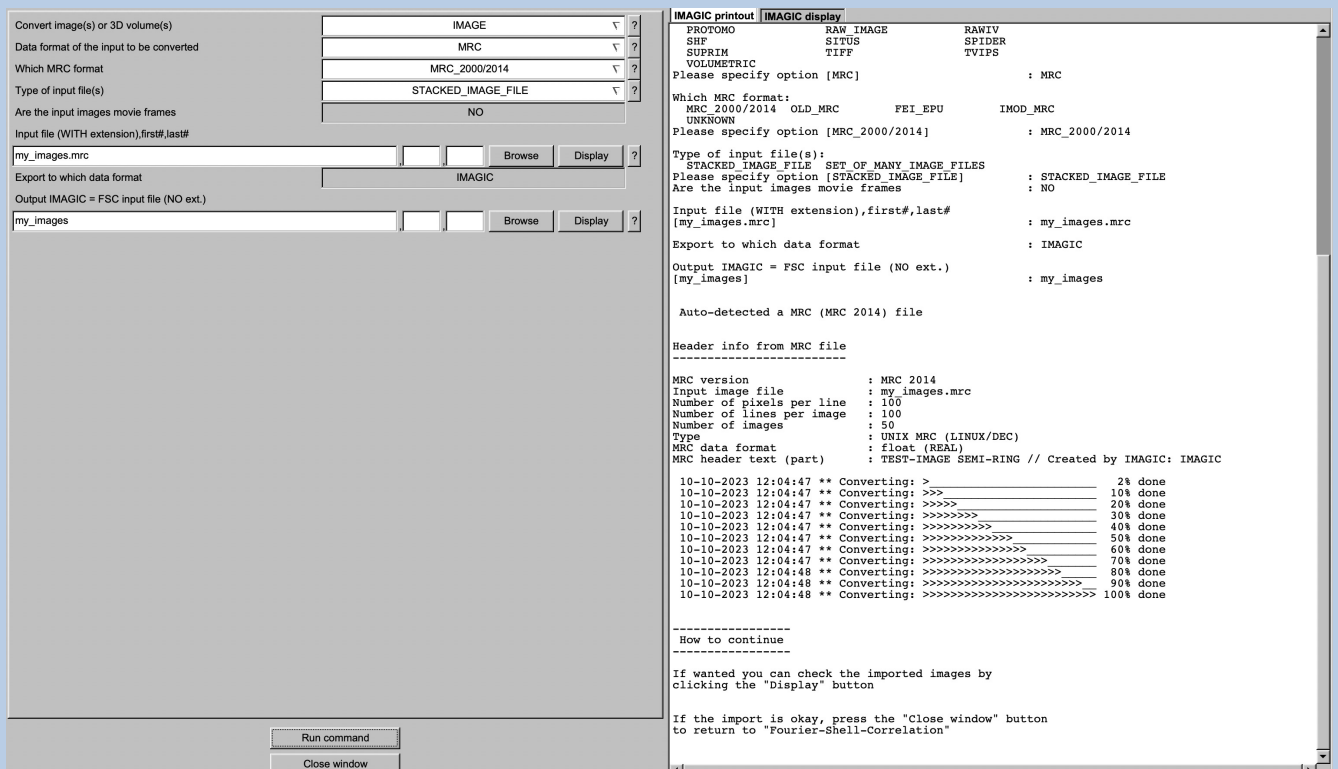


Import Buttons

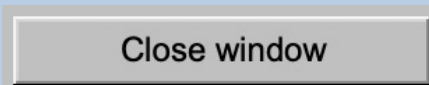
You do not want to use the “Import page” you can sometimes use an “Import” button to import the input images/3D volumes from any 3DEM format. The “Import” button which is located above the text field specifying the name of the related file.



An additional “IMAGIC EM2EM” page will open. Specify all parameters needed and click the “Run command” button to import the images / 3D volumes:



Click the “Close window” button to exit this additional window:

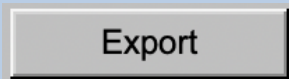


Refer to the **guiEM2EM** manual to get further help.

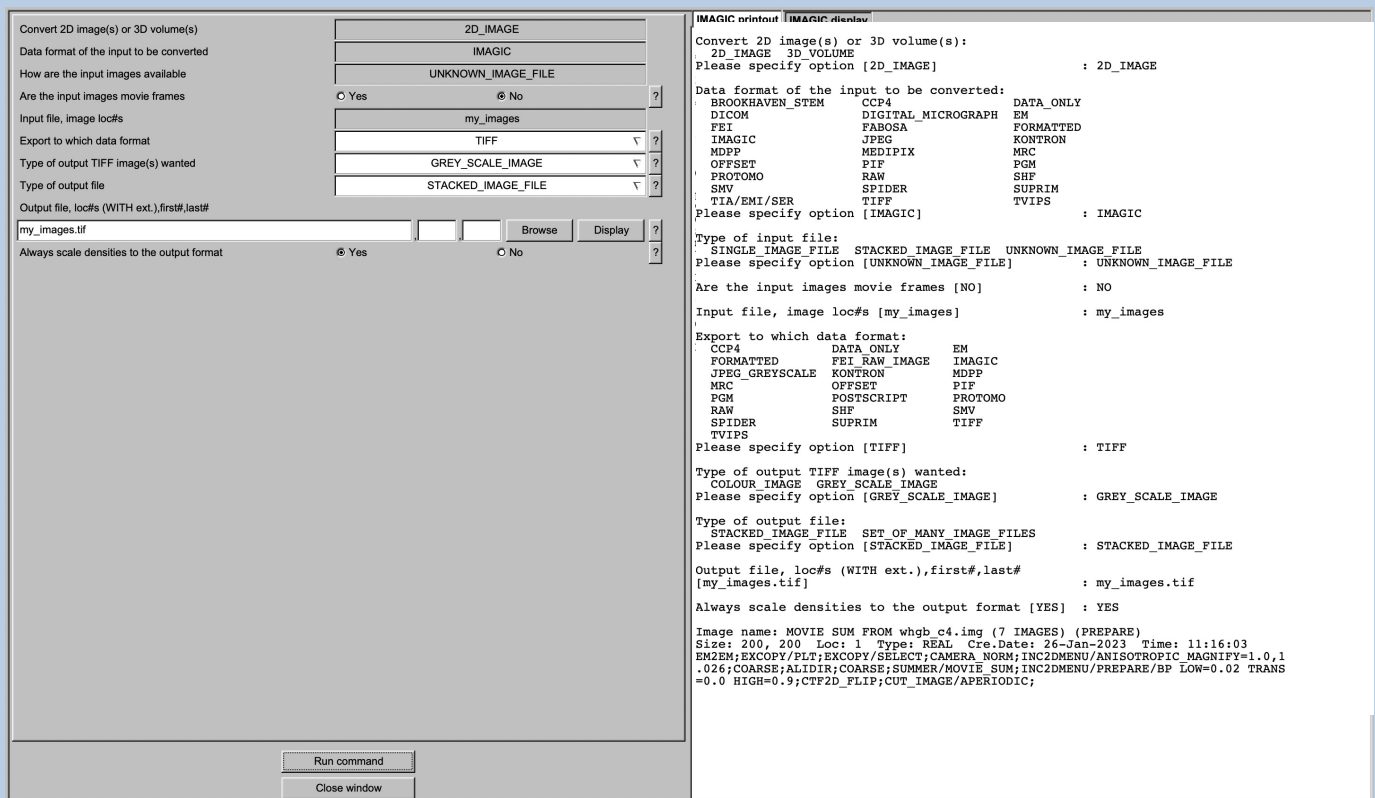


Export Buttons

You can export output images/3D volumes to any 3DEM format. Click the “Export” button which is located above the text field specifying the name of the related file.



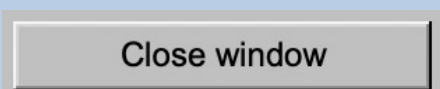
An additional “IMAGIC EM2EM” page will open. Specify all parameters needed and click the “Run command” button to export the images / 3D volumes:

A screenshot of the IMAGIC EM2EM software interface. The window is split into two panes. The left pane is a configuration dialog with various options and dropdown menus. The right pane shows a terminal window with the command-line output of the software. The configuration dialog includes fields for input file name, output file name, and format options. The terminal window displays the same configuration options as text, showing the user's selections and the software's response.

Convert 2D image(s) or 3D volume(s) [2D_IMAGE]
Data format of the input to be converted [IMAGIC]
How are the input images available [UNKNOWN_IMAGE_FILE]
Are the input images movie frames [Yes No]
Input file, image loc#s [my_images]
Export to which data format [TIFF]
Type of output TIFF image(s) wanted [GREY_SCALE_IMAGE]
Type of output file [STACKED_IMAGE_FILE]
Output file, loc#s (WITH ext.),first#,last# [my_images.tif]
Always scale densities to the output format [Yes No]

IMAGIC printout | IMAGIC display
Convert 2D image(s) or 3D volume(s):
2D_IMAGE 3D_VOLUME : 2D_IMAGE
Please specify option [2D_IMAGE]
Data format of the input to be converted:
BROOKHAVEN_STEM CCP4 DATA_ONLY
DICOM DIGITAL_MICROGRAPH EM
FEI FABOSA FORMATTED
IMAGIC JPEG KONTRON
MDPP MEDIPIX MRC
OFFSET PIF PGM
PROTOMO RAW SHF
SMV SPIDER SUPRIM
TIA/EMI/SER TIFF TVIPS
Please specify option [IMAGIC]
Type of input file:
SINGLE_IMAGE_FILE STACKED_IMAGE_FILE UNKNOWN_IMAGE_FILE
Please specify option [UNKNOWN_IMAGE_FILE] : UNKNOWN_IMAGE_FILE
Are the input images movie frames [NO]
Input file, image loc#s [my_images] : my_images
Export to which data format:
CCP4 DATA_ONLY EM
FORMATTED FEI_RAW_IMAGE IMAGIC
JPEG_GREYSCALE KONTRON MDPP
MRC OFFSET PIF
PGM POSTSCRIPT PROTOMO
RAW SHF SMV
SPIDER SUPRIM TIFF
TVIPS
Please specify option [TIFF] : TIFF
Type of output TIFF image(s) wanted:
COLOUR_IMAGE GREY_SCALE_IMAGE
Please specify option [GREY_SCALE_IMAGE] : GREY_SCALE_IMAGE
Type of output file:
STACKED_IMAGE_FILE SET_OF_MANY_IMAGE_FILES
Please specify option [STACKED_IMAGE_FILE] : STACKED_IMAGE_FILE
Output file, loc#s (WITH ext.),first#,last# [my_images.tif] : my_images.tif
Always scale densities to the output format [YES] : YES
Image name: MOVIE SUM FROM whgb.c4.img (7 IMAGES) (PREPARE)
Size: 200, 200 Loc: 1 Type: REAL Cre.Date: 26-Jan-2023 Time: 11:16:03
EMEM;EXCOPY/PLT;EXCOPY/SELECT;CAMERA NORM;INCDMENU/ANISOTROPIC MAGNIFY=1.0,1
.026;COARSE;ALIDIR;COARSE;SUMMER/MOVIE SUM;INC2DMENU/PREPARE/BP LOW=0.02 TRANS
=0.0 HIGH=0.9;CTF2D_FLIP;CUT_IMAGE/APERIODIC;

Click the “Close window” button to exit this additional window:



Refer to the **guiEM2EM** manual to get further help.



A Typical Page

A typical **IMAGIC GUI program** page has three columns.

The left part contains the file information and a kind of terminal window showing the print-out of the currently running IMAGIC program(s). In additional tabs you can find the control windows to adjust the displays on the left hand side.

The middle part usually contains parameters to be specified and a single or a number of “Run” buttons to start the calculation(s).

The right part displays input and output images. Sometimes it can also contain additional follow-up calculations and the related “Run” buttons.



A Typical Page - MPI Parallel

If calculations can run in parallel mode the left part of a typical **IMAGIC GUI program** page also shows the buttons to specify the related parameters.

Run in parallel mode		Specify path and name of MSA scratch file	
<input checked="" type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input checked="" type="radio"/> No
Number of nodes:	<input type="text" value="3"/>	MSA scratch file:	<input type="text"/>



A Typical Page - Program Parameters

Mode of preparation

Pretreat images

Normalise amplitude spectra (NAS)

Pretreat images

Band-pass Filter

LF cut

Rem. LF

HF cut

Normalisation

Sigma

Mask

Radius

Drop off

Test loc. # to

Run for all particles


Centre particles

Self rotate Self

Total sum Mass center

Test loc. # to

Run for all particles



In the middle part of a typical **IMAGIC GUI program** page you will find the program parameters to be used.

Radio Buttons are showing options. One option only has to be used.

Self rotate Self



Total sum Mass center

Click buttons are showing options which you can use or not.

Band-pass Filter

In text fields you can type in the wanted value. If the needed value is a number you can also move the cursor into this field, press the mouse key and keep it pressed and move the cursor to change the value.

There are also boxes where you can use up and down arrows to change the value.



A Typical Page - Automatic / Default

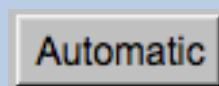
The screenshot shows a control panel with the following elements:

- Resize/Coarsen micrographs
 - Summing parameter: 2
- Create patches
 - Size of patches: 4096
- Prepare micrograph
 - Low freq. cut: 0.0200
 - Remaining low frequency: 0
 - High freq. cut: 0.9000
- Remove outlier pixels
 - Outlier is 4.50 sigma off the mean value
- Invert densities
- Resize/Coarsen prepared micrographs
 - Summing parameter: 2

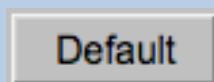
At the bottom, there are three buttons: "Automatic", "Default", and "Run".

In the middle part of a typical **IMAGIC GUI program** page you will also find “Automatic” and “Default buttons.

Pressing the “Automatic” button will fill in the values suggested by IMAGIC.



Pressing the “Default” button will fill in the values which you have used during the last “Run”.



The values shown when entering a page are the default values (your last values given) if they are available. Else the automatic values are shown.



A Typical Page - Run buttons

Create prepared amplitude images

Filter micrographs

Low freq. cut

Remaining low frequency

High freq. cut

Filter amplitude images

Low freq. cut

Remaining low frequency

High freq. cut

Coarsen filtered amplitude images

Yes No

Summing parameter

MSA options

MSA eigenfilter amplitudes

MSA classify amplitudes

MSA

Inner radius of ring mask

Outer radius of ring mask

Number of eigenimages

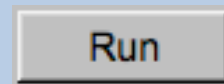
Number of iterations

Classification

Use how many eigenimages

Number of classes

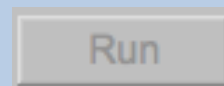
To run the calculations press the “Run” button.



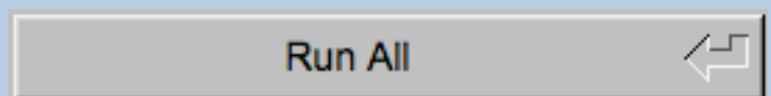
On a number of pages the calculations can be split. In this case you will find more than one single “Run” button.

Not running everything at once can be helpful when testing parameters.

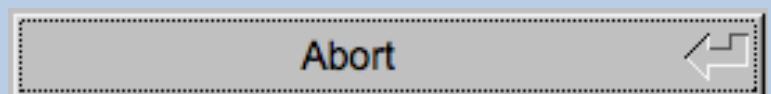
Maybe a certain “Run” button is not yet activated because it needs the results of calculations not yet done.



Pressing the “Run All” button starts all calculations currently activated on the page.

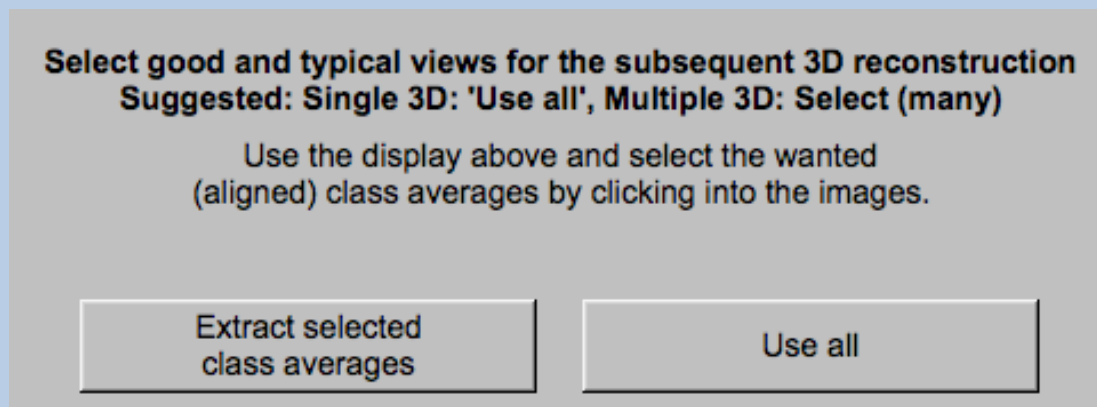


You can abort a running program by pressing the “Abort” button.



A Typical Page - Additional Tasks

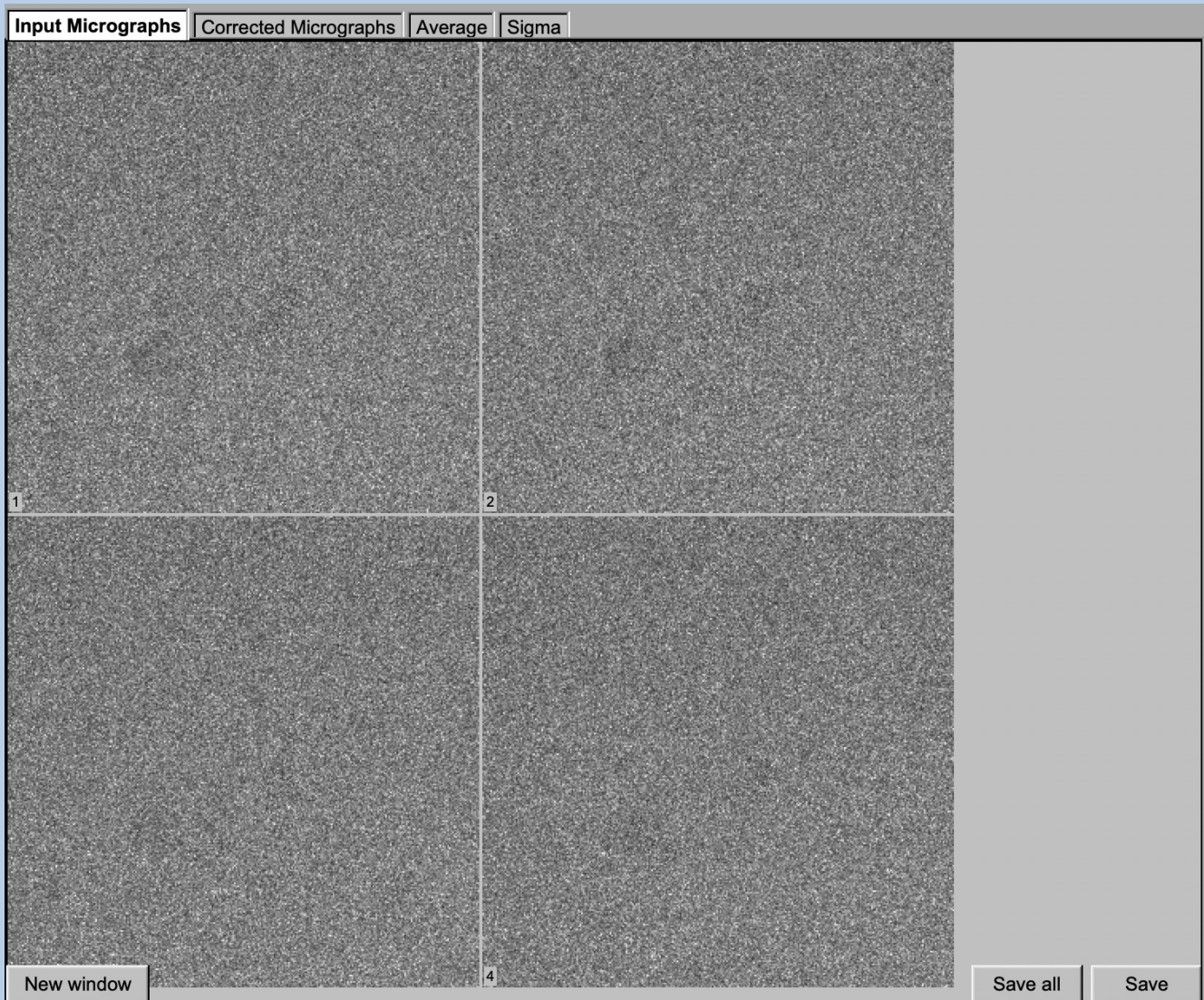
The main calculations on the page are done using the middle part of an typical **IMAGIC GUI program** page. But on a number of pages some additional calculations have to be done. Please follow the instructions given.



Note that the new output images are usually shown in a new display tab.



A Typical Page - Display



In the right part of a typical **IMAGIC GUI program** page you will find displayed images - usually the input and the output images.

You can press the tabs to toggle between the various displays.

Double click into the wanted images or use the "New Window" button to get an enlarged display window. Use "Save" to store the display (JPG).

To adjust the display settings use the related display control tab on the left hand side of the page. Refer to **guiDISPLAY**.



A Typical Page - “Display Control” Tabs

The visualisation settings of the images shown on the right-hand side of each **IMAGIC GUI program** page can be adjusted in its own related “Display control” tab on the bottom left part of each page. Also refer to **guiDISPLAY**.

Grey value scaling: Adjust the contrast

Min/Max: Scale the grey-values to minimum/maximum

Interactive: Set the limits by giving numbers

Sigma: Use an amount of sigma to set the limits

Contrast

How to calculate the grey value scaling

Local: Calculated in each image separately

Global: Calculated using all image densities
(as displayed in the histogram)

Gallery: Calculated in the currently displayed images

Inverse contrast:

Use one of the radio buttons

Zoom

Enlarge the displayed images

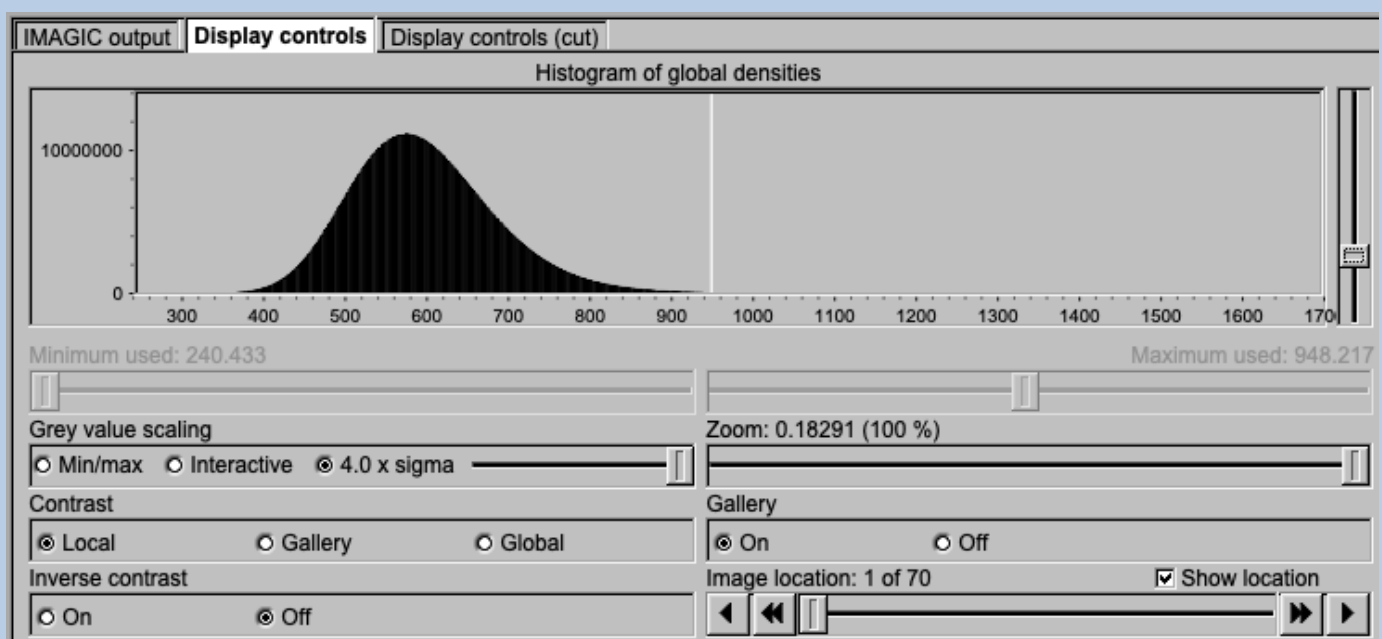
Gallery

On Display the images in a gallery
(may be you need another zoom to see more than one image)

Off Show only one image

Image Locations.

Use the slider or the arrows to select image locations



A Typical Page - “Plot Control” Tabs

The visualisation settings of curves/spectra is shown on the right-hand side of an **IMAGIC GUI program** page can be adjusted in its own related “Plot control” tab on the bottom left part of each page. Also refer to **guiPLOT**.

Style, Colour, Grid: Adjust the curve line style, the colour and add a grid if wanted

Horizontal, vertical scaling: Set minimal and maximal horizontal or vertical limits

Plot title Set the text of the plot title

Text along ... Set the text along the given axis

Use for all plots: Use the setting for all plots in a file independent of what is input in the PLT file

Reset:. Reset to the automatic values

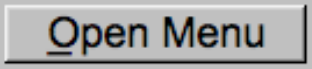
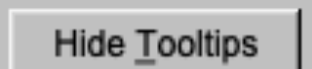
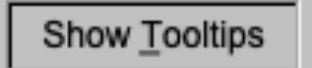
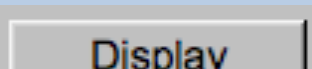
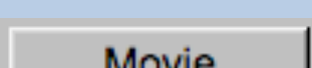
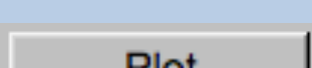
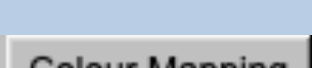

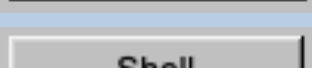
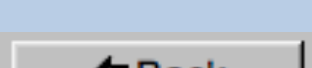
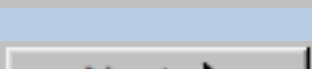
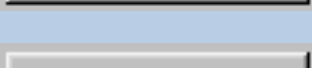
Style Select curve style ▾	Colour Select curve colour ▾	Grid Select curve grid ▾
Horizontal scaling 1.00	<input type="checkbox"/> Use for all plots 32.00	Reset
Vertical scaling -19.21	<input type="checkbox"/> Use for all plots 17.00	Reset
Plot title Fourier Ring Information - ½-bit	<input type="checkbox"/> Use for all plots	Reset
Text along horizontal axis Radius in Fourier space	<input type="checkbox"/> Use for all plots	Reset
Text along vertical axis	<input type="checkbox"/> Use for all plots	Reset



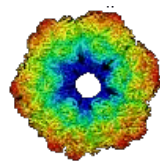
A Typical Page - The Toolbar

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

The toolbar buttons:

	Open the MENU to navigate to each page wanted
	Show or hide the context sensitive tooltips (the help text may sometimes disturb)
	
	Open a DISPLAY page to visualize IMAGIC images. Refer to guiDISPLAY .
	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.
	Open a list to run any IMAGIC command. Refer to guiIMAGIC .
	Run a shell / terminal page. command
	Go to the previous page
	Continue with the next page
	Exit guiANISOTROPIC



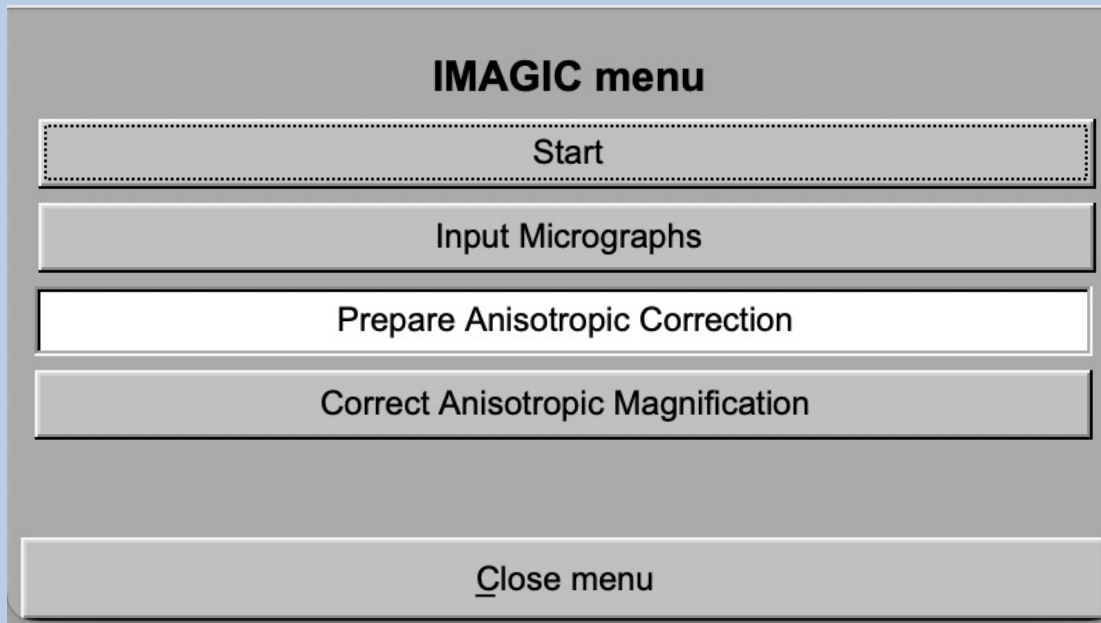


IMAGIC

guiANISOTROPIC



The guiCTF Menu



PAGES:

guiANISOTROPIC:

Input Micrographs:	Convert micrographs/images into IMAGIC image format
Prepare Micrographs	Pre-treat Micrographs
Prepare correction	Prepare the anisotropic magnification correction (find diffraction ring)
CTF Correction	Find anisotropic magnification and correct micrographs for it

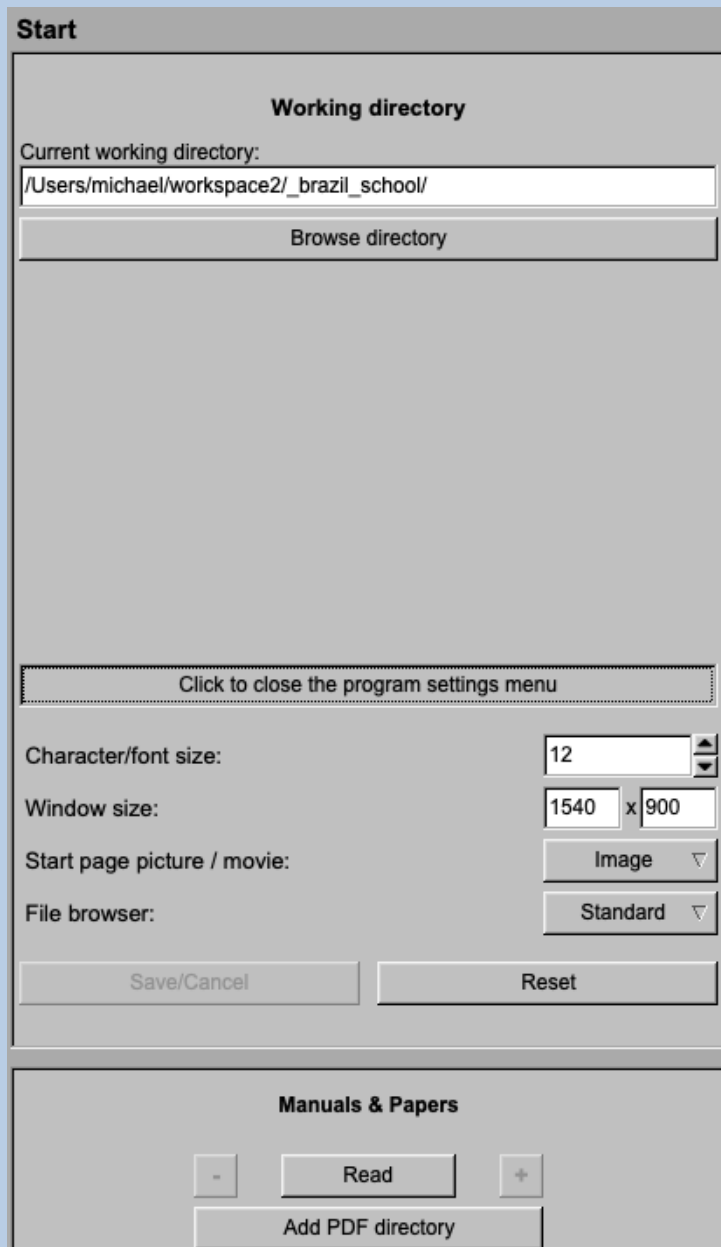
General:

Start:	Page to adjust some program parameters
Close menu:	Close this menu and return to last page.



The “Start” Page

This page is not part of the **guiANISOTROPIC** workflow and can only be reached using the “Back” or the “Open Menu” button(s).



On this page you can set some program parameters:

- a) the working directory
- b) the size of the **guiANISOTROPIC** program windows and/or text (a re-start is needed)
- c) the type of file browser



Start Working

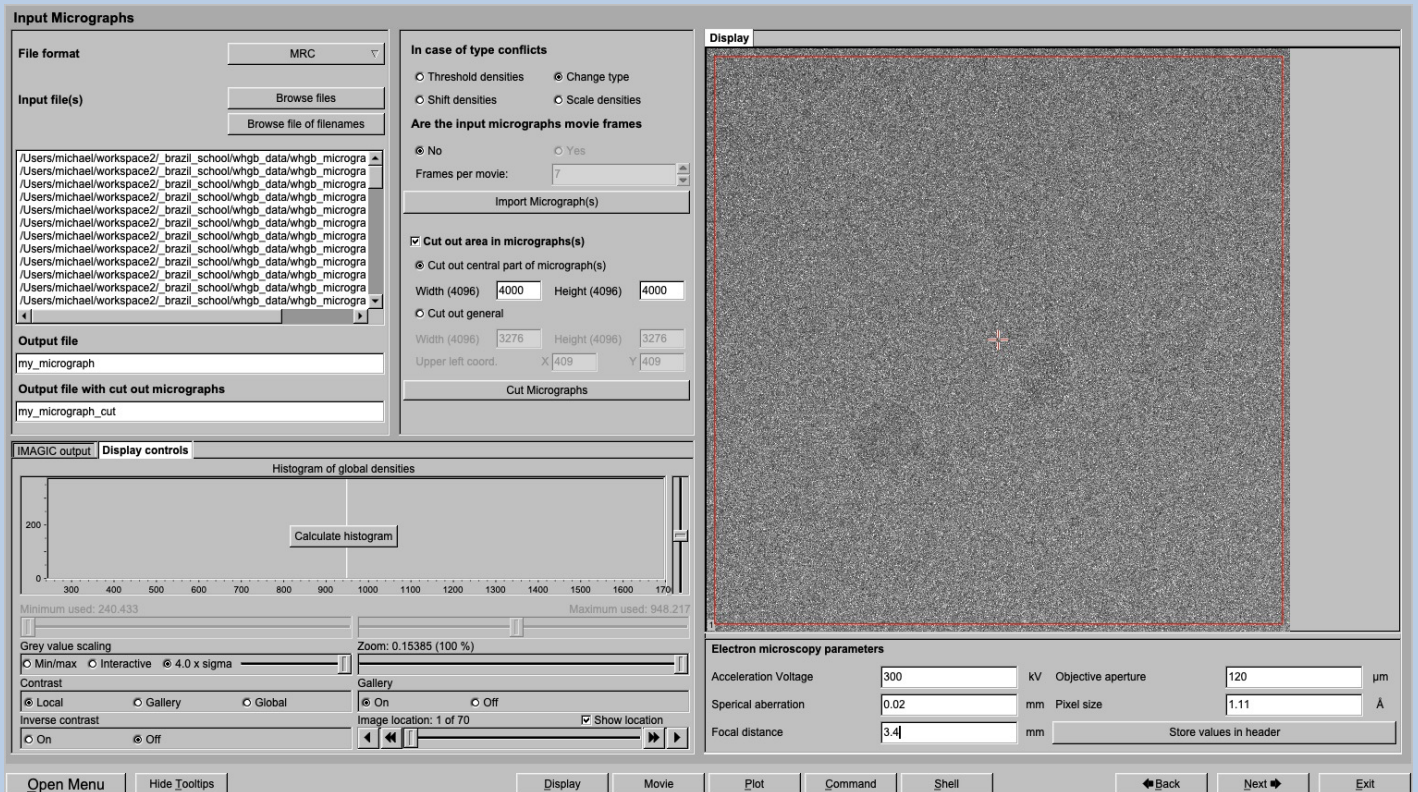
The page **guiANISOTROPIC** starts with the “Import Micrograph” page.

The workflow using the “Next” button will guide you through all **guiANISOTROPIC** pages.

Use the “Back”, “Next” or “Open Menu” buttons to skip a page or to choose the wanted page.



The “Import Micrographs” Page



DESCRIPTION:

Convert import micrograph files using any 3D-EM format (or TIFF) into a single (stacked) IMAGIC image file.

The page can be skipped if your input images are already stored in IMAGIC format and if all electron microscopy parameters are already stored in the input headers.

If wanted you can cut-out parts of the input images. Not suggested for CTF correction.

Also refer to program **guiIMPORT**.



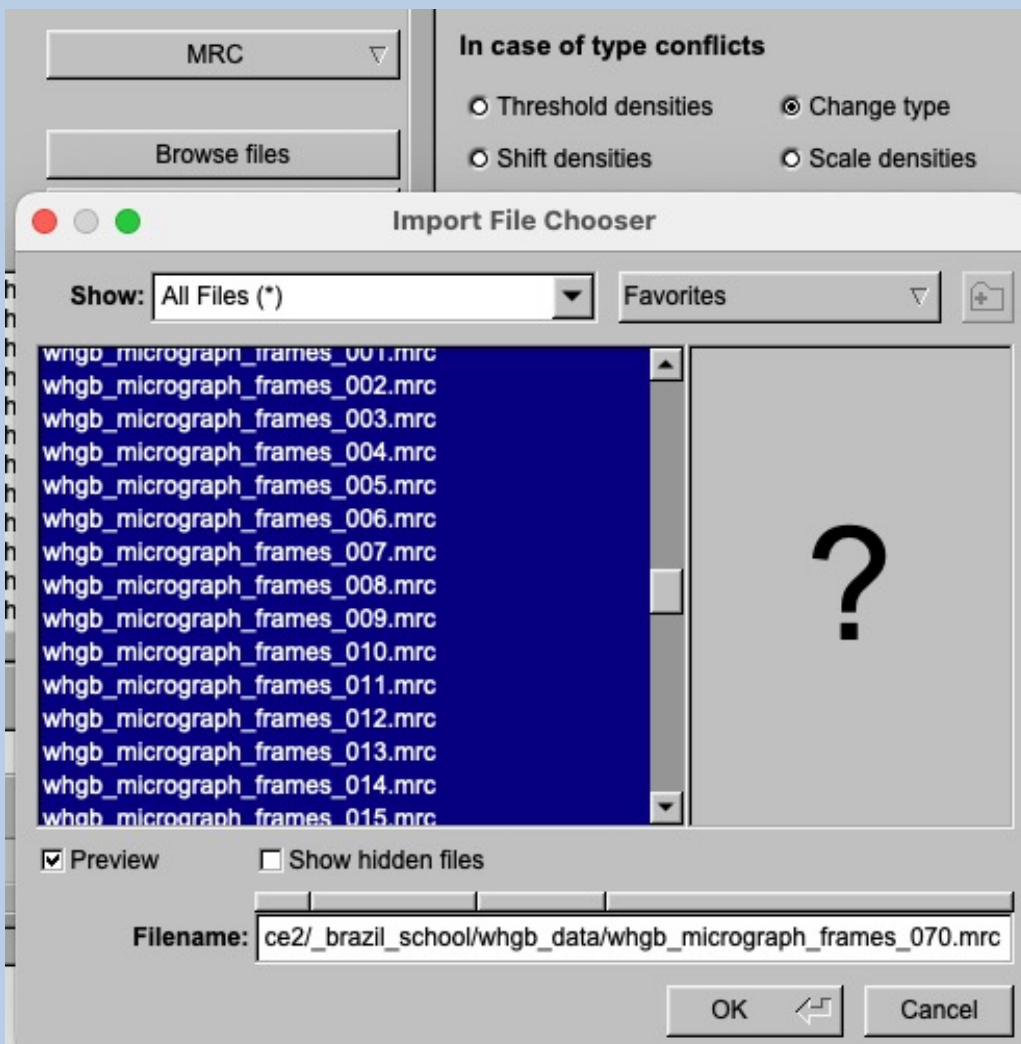
IMPORT MICROGRAPHS:

Specify the file format in which your input micrographs/images are stored. Click the “Select format” button

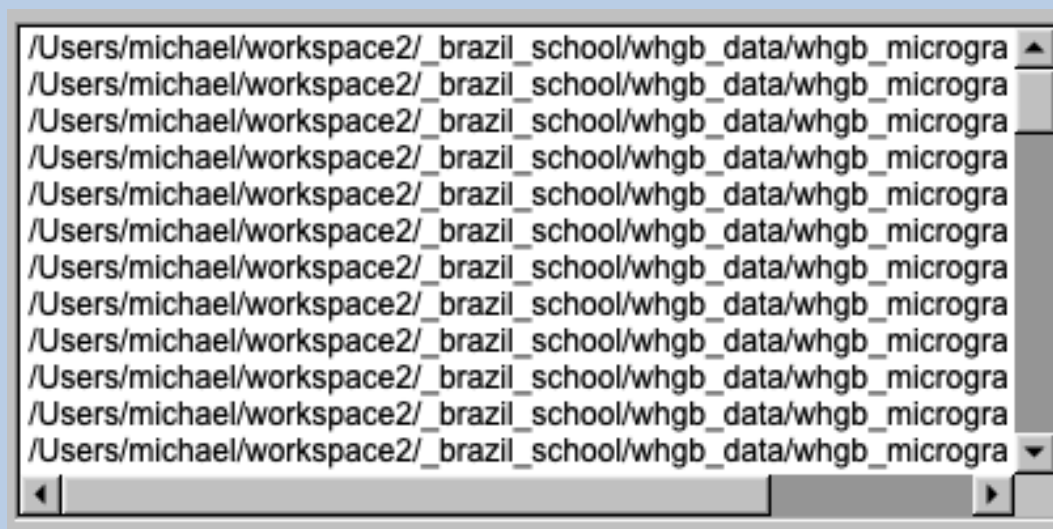


and choose one of the formats in the listing.

Now you can specify the input image files or a “File of filenames” text file (containing the names of the wanted input image files) with the “Browse” button. Refer to chapter “Input Files” and “Input. File Chooser” for help.



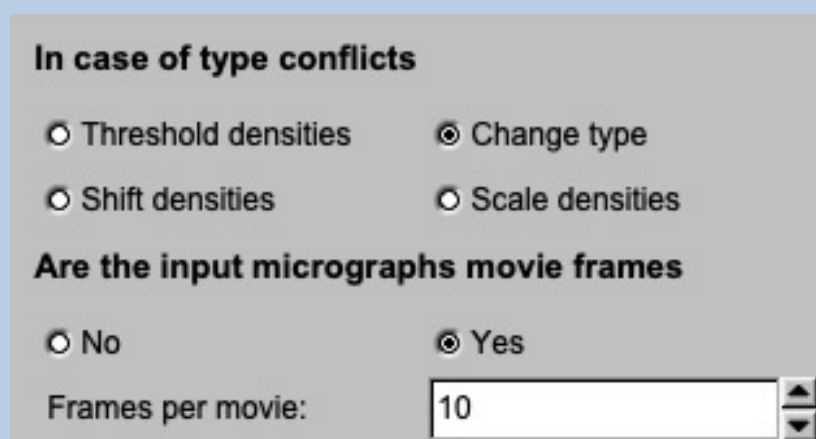
If wanted you can edit the list of files. But be careful there is no automatic control of file names in this list.



Next, you need to specify the name of the output file which is the IMAGIC image file which will contain the imported image(s).

Depending on the format of the input images you have to specify a number of parameters or options.

Format MRC, for example:



Having specified every information needed click the "Import Micrograph" button to start the import of the image(s).

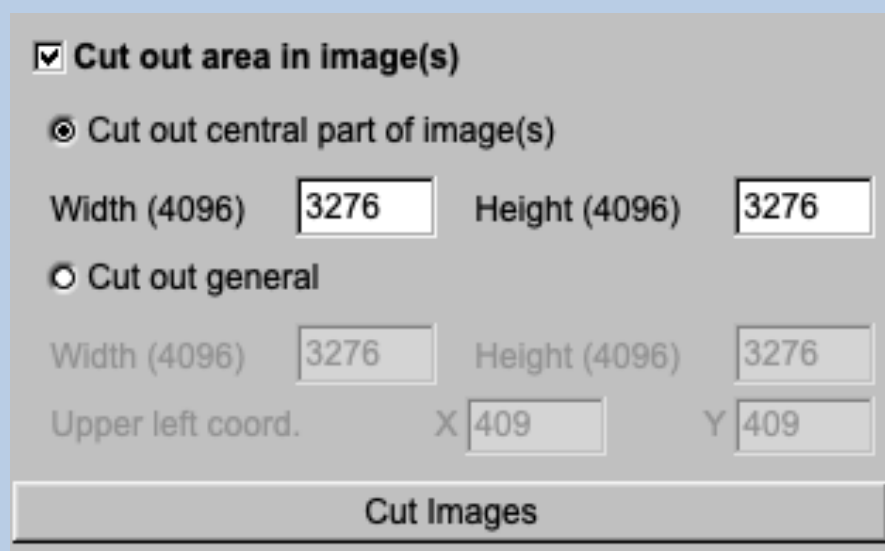
The imported images are shown in the display tab on the right-hand side. See chapter "A Typical Page - Display control tabs".



CUT MICROGRAPHS / IMAGES (not suggested in **guiANISOTROPIC**):

Having imported the input images, you may want to not use the full size of the images but only a part of them.

Clicking the “Cut out area of image(s)” option you can cut-out parts of the imported images:



Cut out area in image(s)

Cut out central part of image(s)

Width (4096) Height (4096)

Cut out general

Width (4096) Height (4096)

Upper left coord. X Y

Cut Images

The chosen part is shown in the display window. You can cut-out a central part or any part wanted. The cut-out part is the same in all images, of course.

The name of the output file containing the cut-out images is suggested on the left-hand side. As usual you can change this name, of course.

Having specified everything click the “Cut Images” button to run the calculations.



SPECIFY THE ELECTRON MICROSCOPY PARAMETERS):

If not yet stored in the input headers you have to specify the the parameters of the electron microscope the micrographs were imaged with.

Electron microscopy parameters					
Acceleration Voltage	<input type="text" value="300"/>	kV	Objective aperture	<input type="text" value="120"/>	μm
Spherical aberration	<input type="text" value="0.02"/>	mm	Pixel size	<input type="text" value="1.11"/>	\AA
Focal distance	<input type="text" value="3.4"/>	mm	<input type="button" value="Store values in header"/>		

Having specified all parameters use the button “Store values in header” to write the given parameters into the input headers:



Prepare the micrograph images for CTF determination

You can resize the micrograph images

Resize/Coarsen micrographs

Summing parameter

or create patches

Create patches

Size of patches

to speed up the CTF calculations.

Imposing a band-pass filter is always suggested:

Prepare/filter micrographs

Low freq. cut

Remaining low frequency

High freq. cut

Remove outlier pixels

Outlier is sigma off the mean value

If wanted you can also invert the contrast although this does not change any CTF calculation.

Invert densities

Finally, you can once more resize the pre-treated micrographs:

Resize/Coarsen prepared micrographs

Summing parameter



As usual, specify the names of the input and the output files:

Input file with (aligned) micrographs Browse file

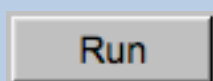
my_micrograph

Size = 1024x1024, Images = 5

Output file with prepared micrographs

my_micrograph_prep

Start the calculations by clicking the “Run” button:



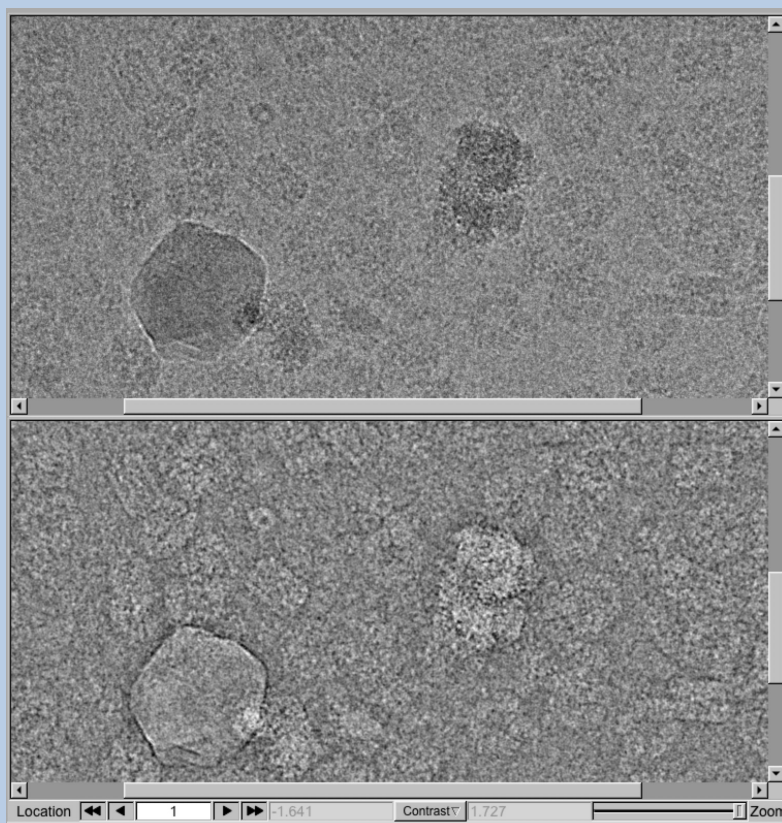
Play around with the parameters running movie alignment on a single or a small range of micrographs.

Test run on micrograph

Test run on micrographs 1 to 2

Run for all micrographs

Check the pre-treated micrographs:



If all parameters are adjusted and the pre-treated micrographs look okay run the calculations for all micrographs:

Test run on micrograph

Test run on micrographs

Run for all micrographs

1 to 2



The “Prepare Anisotropic Magnification Correction” Page

Prepare Anisotropic Magnification Correction

Input file with (prepared) micrographs (or patches)
micrographs_prep_some [Browse]

Output images of amplitudes Size = 1024x1024, Images = 21, Frames per movie = 3
micrographs_prep_some_aniso_ampl [Export]

Output images of amplitudes sum
micrographs_prep_some_aniso_ampl_sum [Export]

Output eigenimages of amplitudes
micrographs_prep_some_aniso_ampl_eigen [Export]

Root name of output amplitudes classification files
micrographs_prep_some_aniso_ampl_classify

Output class averages of amplitudes
micrographs_prep_some_aniso_ampl_classums [Export]

Output file with diffraction ring image
micrographs_prep_some_aniso_ampl_ring [Export]

Run in parallel mode Specify path and name of MSA scratch file
 Yes No Yes No
Number of nodes: 10 MSA scratch file:

IMAGIC output Micrographs Amplitudes Sum Eigenimages

Histogram of global densities
Calculate histogram

Minimum used: -0.00293435 Maximum used: 0.00293795

Grey value scaling Zoom: 0.11687 (49 %)

Min/max interactive 5.0 x sigma

Contrast Local Gallery Global On Off

Inverse contrast On Off Image location: 1 of 7 Show location

Create amplitude images

Filter amplitude images
Low freq. cut 0.03
High freq. cut 0.7

Coarsen (filtered) amplitude images
Summing parameter 2

Automatic Default Run

MSA of amplitudes
Inner radius of ring mask 0.45
Outer radius of ring mask 0.9
Number of eigenimages 10
Number of iterations 12

Automatic Default Run

Classification of amplitudes
Use how many eigenimages 5
Number of classes 5

Automatic Default Run

Select a single diffraction ring image from
 amplitudes
 amplitude sum
 eigenimages
 class averages

Extract

DESCRIPTION:

Create amplitude images of the input micrographs, the amplitude sum, the amplitude MSA eigenimages and/or the amplitude class averages. Finally select the image with the best visible diffraction ring to be used on the next page to correct for the anisotropic magnification.



Input are the prepared micrograph images which file name you have to specify

Input file with prepared micrographs (or patches)

whgb_micrographs_prep Browse file

Size = 1024x1024, Images = 500

As usual, also specify the output file names.

First the amplitudes of the (pre-treated) micrographs are calculated. These amplitudes are treated like real images which will be masked and band-pass filtered (especially the background has to be removed by reducing the low frequencies). All this treatment is done to enhance the contrast of the amplitude images so that the Thon rings are better visible.

Play around with the filter parameters (to speed up the CTD estimation you can additionally resize the amplitude images):

Create amplitude images

Filter amplitude images

Low freq. cut

High freq. cut

Coarsen (filtered) amplitude images

Summing parameter

Now it is necessary to check if the filter parameters were chosen correctly. Therefore, all pre-treated amplitudes will be averaged and displayed on the right-hand side.



If the diffraction ring is clearly visible in one of the amplitude image or in the amplitude sum you can select and extract this image (on the right hand side of this page) to be used on the next page to find the anisotropic magnification parameters. In this case do not use options MSA and classification.

But very often MSA and/or classification is used to detect the diffraction ring:

MSA of amplitudes

Certain radial areas are not of interest and should not be taken into consideration for MSA. Check if the ring mask correctly masks out the unwanted inner and outer parts. Start with the automatically given MSA parameters. You can later adjust the parameters when checking the eigenimages.

MSA of amplitudes

Inner radius of ring mask

Outer radius of ring mask

Number of eigenimages

Number of iterations

In contrast to the individual amplitude images one of the MSA eigenimages can better show the diffraction ring. If this is the case you can select and extract this eigenimage (on the right hand side of this page) to be used on the next page to find the anisotropic magnification parameters. In this case do not use option classification.

If no eigenimage shows the diffraction ring you can create the amplitude class averages. Hopefully, one of the class averages shows the diffraction ring.

Classification of amplitudes

Use how many eigenimages

Number of classes



Use the option on the right hand side to select the image with the best diffraction ring by clicking into its image in the display tab on the right hand side. Not that in option "amplitude sum" is nothing to click because it is only one image.

Select a single diffraction ring image from

- amplitudes
- amplitude sum
- eigenimages
- class averages

Click the "Extract" button to extract and store this image which will be used on the next page to find the anisotropic magnification parameters.

Extract

Click the "Next" button to continue with the next page to find and correct for the anisotropic magnification.

Next ➡



The “Correct Anisotropic Magnification” Page

Find and Correct Anisotropic Magnification

Input file with diffraction (water) ring image
micrograps_prep_some_aniso_ampl_eigen_ring
Size = 1024x1024, Images = 1

Input file with micrographs

Output file with diffraction (water) ring average
micrograps_prep_some_aniso_ampl_eigen_ring_average

PLT file with magnification parameters
micrograps_prep_some_aniso_ampl_eigen_ring.plt

Output file with corrected micrographs

Run in parallel mode
 Yes No Number of nodes: 10

Find anisotropy

Max. anisotropy expected (%)

Ring mask radius

Inner

Outer

Correct anisotropy

IMAGIC output

```
Max. magnification expected (in %) [3] : 3
Ring-mask inner and outer radius [0.61,0.73] : 0.61,0.73

-----
Am finding anisotropical magnification

** FIND_ANISOTROPIC_MAG (vs. 29-Jan-2023) welcomes you **
Input image with elliptical diffraction ring :
Output file elliptically averaged :
PLT output file with magnifications :
Maximal anisotropic magnification expected : 3.0
Ring-mask inner and outer radius : 0.61,0.73
Full output : NO

-----
30-01-2024 14:37:52 ** Am working on ring-image # 1
-----
30-01-2024 14:37:54 ** Angular orientations: _____ 1% done
```

Ring

DESCRIPTION:

Find the anisotropic magnification parameters using an image with the diffraction ring and correct the input micrographs.



FIND ANISOTROPY:

As usual, specify the input file with the diffraction ring as well as the output file names on the left hand side.

Parameters which can be specified are the maximal anisotropy you expect

Max. anisotropy expected (%)	<input type="text" value="3"/>
------------------------------	--------------------------------

and the ring mask within which the diffraction ring is located

Ring mask radius	
Inner	<input type="text" value="0.61"/>
Outer	<input type="text" value="0.73"/>

Click the "Run" button to start the calculation.

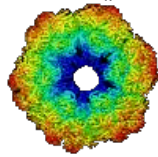
Check the magnification parameters found in the "MAGIC output" tab on the left hand side of the page. The display tab the right hand side shows a ring average which is the best fit elliptically averaged version of the ring image as a feedback to assess the quality of the best re-magnification parameters found.

CORRECT ANISOTROPY:

Having found the correct magnification parameters one specify the input micrographs and correct them for the anisotropic magnification found (and stored in the PLT file which now is an input file.

As usual, do not forget the specify the name of the output file to hold the corrected micrographs and start the calculations using the "Run" button.





IMAGIC

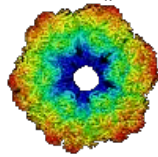
guiANISOTROPIC

Not (yet) possible

The following options are not (yet) possible:

- Run in batch mode.
- Store output files and results of different pages in different sub-directories of the working directory.





IMAGIC

guiANISOTROPIC

Feedback / Error hints

We intensively tested the **guiANISOTROPIC** 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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