HAADF deconvolution

Introduction

This manual explains how to deconvolve the effect of theprobe in HAADF images.

You need:

- a very good HAADF image
- A quite accurate idea of the optical parameters like defocus, Cs, convergence. Energy and if necessary astigmatism of your beam.

Operations

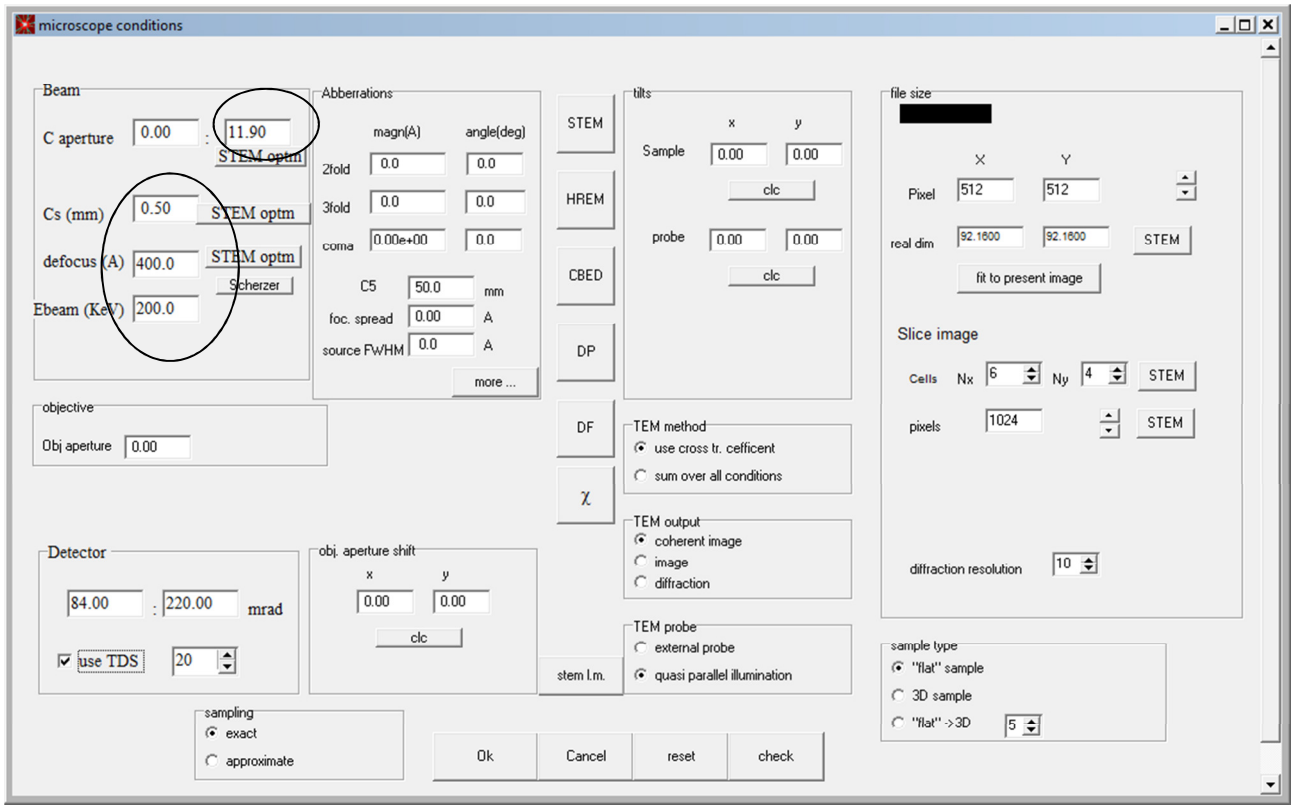
Open the image you want to deconvolve.

File->OpenExpImage

> **Attention**:Check that the image is correctly calibrated. You can take a look at Extra-> Calibrate->Set x-y pixsize. This gives you the pixel size in Angstrom. Check that the number correspond to what you expect.

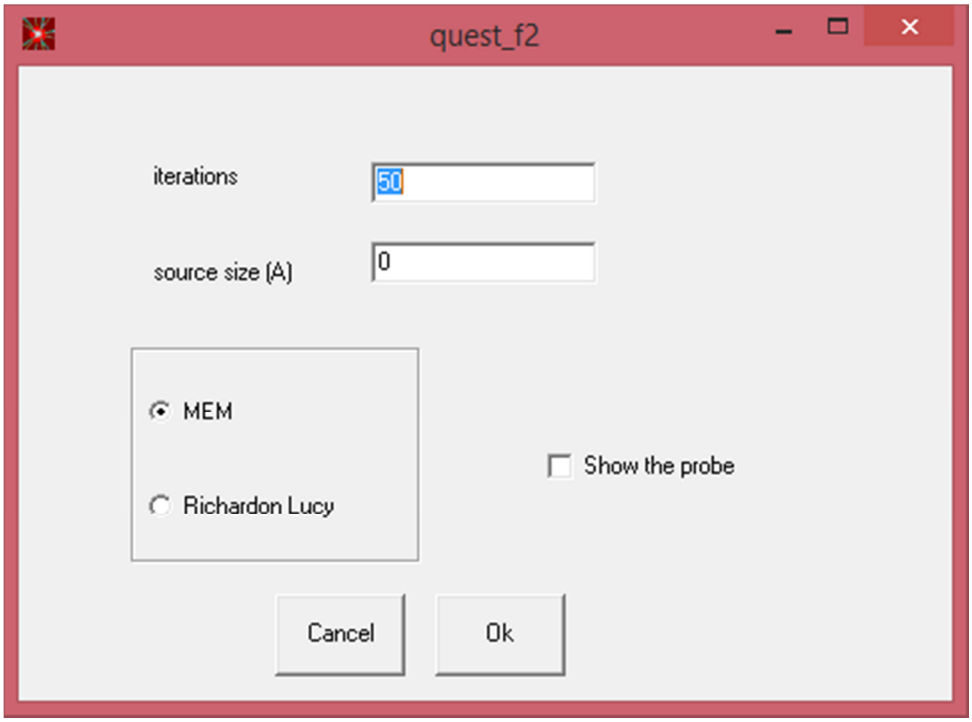
Open Parameters->beam/det.

Set the appropriate parameters here highlighted.



Close the window.

Now press  , the following new window should appear



You can decide diferent parameters : here is meaning

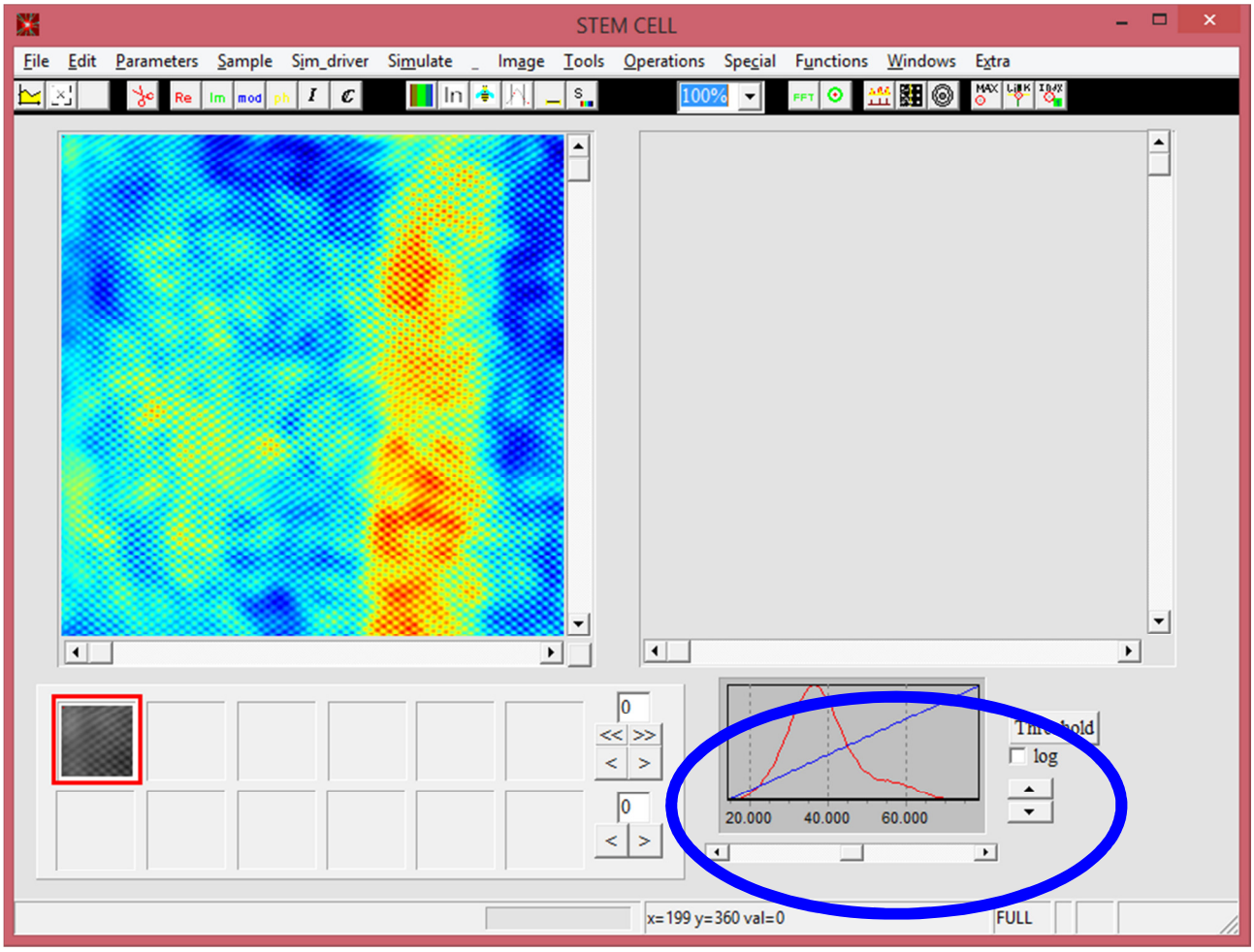
- Iteration number: The larger is this parameter the thinner will be the peak but thelimit is dictated by the level of noise.
- The source size depends on the setting of your microscope . In a corrected titan I would say about 0.3 A In an uncorrected JEOL I can guess about 1A . You can try small changes about this value
- Method: MEM and RL are often equivalent but MEM is maybe slightly more aggressive
- Show the probe: can be used as debug options

after some time , up to some minutes in slow systems the deconvolved image (and the probe if required) should appear. Double click to select the image you want to see.

Usual trick

As with every image you can use color scale to highlight the dumbbell. just press  .

As usual you can equalize the image using  to sleect the method (in the AUTO) the euqalisation is based on the selection rectangle. Or you can manually set the brightness and contrast by the command indicated in figure.


STEM CELL
File Edit Parameters Sample Sim_driver Simulate Image Tools Operations Special Functions Windows Extra
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x=199 y=360 val=0
FULL