

gs

***** Grasp Automation Language Help *****

Use a text editor to write a script file using the 'gs' commands below
AND any usual Matlab commands, e.g. to make loops etc.

Run the grasp script file either from the Matlab command line or from the
Grasp Script menu in Grasp

Any Grasp operation can in-principle be automated and the 'gs' script
language is growing according to requested functionality
Please contact me, dewhurst@ill.fr to include additional functionality

An example file might contain:

```
gs('load',1,1,'88144{21}')      %sample worksheet 1
gs('load',2,1,'88526{21}')      %background worksheet 1
gs('display',1,1,0)             %Switch display back to sample worksheet 1 sum
gs('bg','on')                   %Subtract background from foreground
gs('boxit','san',[43,48,60,65,1],[78,84,60,65,1]) %Box Two Bragg peaks
```

***** Commands *****

***** Instrument and Data Configuration *****

```
gs('load',wks,nmbr,'loadstring')
    Loads data into the wks, nmbr
    worksheet as described by the 'loadstring'
    e.g. gs('load',1,1,'12345{21}')
```

```
gs('set_data_dir',datapath)
    Sets the data directory
    e.g. gs('set_data_dir','/Users/chuck/Desktop/sans_data/')

gs('set_project_dir',datapath)
    Sets the project/output directory
    e.g. gs('set_project_dir','/Users/chuck/Desktop/')

gs('set_instrument',facility,inst)
    Sets the current working instrument
    e.g. gs('set_instrument','ILL','d22_legacy')
```

***** Analysis Tools *****

```
gs('cm',option)
    Calculates the Beam Centre from the centre of mass of the current
    displayed image
    option = [x1,x2,y1,y2] axis limits within which to take the centre
    of mass
    e.g. gs('cm')
    e.g. gs('cm',[40,80,20,100])

gs('boxit','pname',box1,box2....)
    Makes a box sum though the current depth against parameter 'pname'.
    boxes are described by [xmin,xmax,ymin,ymax,det], where det is the
    detector number. Up to 6 boxes possible
    e.g. gs('boxit','san',[43,48,60,65,1],[78,84,60,65,1])

gs('sectors',[R1,R2,Th,dTh,Mirrors])
    Opens the sectors tool with inner radius R1, outer radius R2, angle
    Th and opening dTh. Mirrors (optional) is the number of mirror
    sectors
    e.g. gs('sector',[10,100,0,45,2])

gs('sector_boxit','pname',sectbox1,sectbox2....)
    Makes a sector box sum though the current depth against parameter 'pname'.
    boxes are described by [R1,R2,Theta,DTheta].
    Up to 6 boxes possible
    e.g. gs('sector_boxit','san',[15,25,90,20])
```

```

gs('fit1d',fn_name,curve#,guess)
    Fits a 1D curve in the grasp_plot window with function given by the
    fn_name (as it appears in the functions list), curve# is the curve
    number to fit, guess is a flag, 1(yes) or 0(no) as to autoguess
    before fitting
    e.g. gs('fit1d','Gaussian',1,1)

gs('fit2d',fn_name,#functions,guess)
    Fits a 2D curve in the main grasp window with function given by the
    fn_name (as it appears in the functions list), #functions is the
    number of simultaneous functions to fit (note autoguess does not
    work for multiple functions), guess is a flag, 1(yes) or 0(no) as
    to autoguess before fitting
    e.g. gs('fit2d','Gaussian - Polar Pixels',1,1)

gs('fit_memory',option)
    option = 'clear' - clears all fit memory from grasp script
    option = 'on' - starts recording of fit parameters. No option
    argument defaults to turn on the recording of fit parameters
    option = 'off' - stops recording of fit parameters
    e.g. gs('fit_memory','clear')

gs('save_fit_params',fnamepath);
    Saves the fit parameters to the file and path described by
    fnamepath. If fnamepath does not exist then opens a save dialog box
    e.g. gs('save_fit_params','~/Desktop/fit_params.dat')

gs('export_grasp_plot_data')
    Saves the current data plotted in grasp_plot
    to the directory specified as the project directory.
    See gs('set_project_dir',datapath)

gs('iq', option1, argument, option2, argument etc.) - IvsQ average
    Performes radial average I vs. Q
    option = 'sectormask', argument = 0 (off), 1 (on) - Use sector mask
    option = 'stripmask', argument = 0 (off), 1 (on) - Use strip mask
    option = 'directtofile', argument = 0 (off), 1 (on) - Save direct to file
    option = 'qbinunits', argument = 'pixels', 'absolute', 'resolution'
    option = 'qbinpixels', argument = 1, 2 etc.
    option = 'qbinabsolute', argument = 0.001 etc.
    option = 'qbinresolution', argument = 5 etc.
    option = 'qbinabsolutescale', argument = 'linear', 'log10'
    option = 'singledepthtof', argument = 0 (single), 1 (depth), 2 (tof)
    e.g. gs('iq')
    e.g. gs('iq','sectormask',1)
    e.g. gs('iq','qbinunits','pixels','qbinpixels',2,'directtofile',1)

gs('i2t', option1, argument, option2, argument etc.) - Ivs2Theta average
    Performes radial average I vs. 2theta
    option = 'sectormask', argument = 0 (off), 1 (on) - Use sector mask
    option = 'stripmask', argument = 0 (off), 1 (on) - Use strip mask
    option = 'directtofile', argument = 0 (off), 1 (on) - Save direct to file
    option = 'thetabinunits', argument = 'pixels', 'absolute', 'resolution'
    option = 'thetabinpixels', argument = 1, 2 etc.
    option = 'thetabinabsolute', argument = 0.001 etc.
    option = 'thetabinresolution', argument = 5 etc.
    option = 'thetabinabsolutescale', argument = 'linear', 'log10'
    option = 'singledepthtof', argument = 0 (single), 1 (depth), 2 (tof)
    e.g. gs('i2t')
    e.g. gs('i2t','stripmask',1)
    e.g. gs('i2t','thetabinunits','absolute','thetabinabsolute',0.05)

gs('ixi', option1, argument, option2, argument etc.) - IvsAzimuthal angle
    Performes azimuthal average I vs. Xi (angle around detector)
    option = 'sectormask', argument = 0 (off), 1 (on) - Use sector mask
    option = 'stripmask', argument = 0 (off), 1 (on) - Use strip mask
    option = 'directtofile', argument = 0 (off), 1 (on) - Save direct to file
    option = 'azimuth_bin_units', argument = 'absolute'
    option = 'azimuth_bin_absolute', argument = 1, 2 etc. (degrees)
    option = 'singledepthtof', argument = 0 (single), 1 (depth), 2 (tof)
    e.g. gs('ixi')
    e.g. gs('ixi','sectormask',1)
    e.g. gs('ixi','singledepthtof',1)

```

***** Display Tools *****

```

gs('display',fw,fn,fd)
    Toggles the grasp main display to show worksheet: fn, number: fw,

```

```

depth: fd. A depth of 0 displays the sum

gs('bg','on')
    Enable/Disable background subtraction 'on', 'off'

gs('bb','on')
    Enable/Disable blocked beam subtraction 'on', 'off'

gs('close',option,option2)
    Closes the last open grasp_plot window if option =
    option = 'all' closes all grasp_plot windows
    option = '', option2 = <window name>
    e.g. option2 = 'Curve Fit Control', closes the curve fit window
    e.g. gs('close','all')

gs('axis_limits',[x1,x2,y1,y2])
    Rescales the current display to the given axis limits
    e.g. gs('axis_limits',[40,80,20,100])

gs('axis_rescale')
    Rescales the current display to the full limits
    e.g. gs('axis_rescale');

```