SPEC Macros for REIXS RSXS Endstation

Change EPU Polarization and Harmonic (REIXS EPU)

- **polar_r** *polarization* [*angle*]
  Options are: cl, cr, lh, lv+, lv-, li (for circular left, circular right, linear horizontal, linear vertical +, linear vertical -, linear Inclined)
  Angle is between -90 to +90 (degree). Circular polarization is available for the first harmonic only.
- **harmo_r** *harmonic*
  Options are: 1, 3, 5, 7 or 9

Region Scan

- **rscan** *motor start end_1 intervals_1* [*end_2 intervals_2*] [...] *sec*
  Scan with variable point density. Count to time (in seconds) only.

Continuous th2th Scan

- **cth2th** *tth_start_rel tth_finish_rel sleeptime*
  tth from low to high angle. Count to time (in seconds) only. tth speed 2 degree/sec.

Energy Scan

- **Escan** *start finish intervals time* [*fixQ*]
  Energy units in eV. fixQ means keeping HKL constant.
- **rEscan** *start end_1 intervals_1* [*end_2 intervals_2*] [...] *sec*
  Constant HKL (fixQ) energy scan with variable point density. Works better from high energy to low.

Energy-L Mesh Scan

- **elmesh** *Estart Efinish intervals_1 Lstart Lfinish intervals_2 time*
  Energy – L mesh scan.
  Energy-H Mesh Scan also available: ehmesh

Select Detector Filter / Slit

- **slitselect** *slit_number detector_name*
  Slits are numbered 1 to 10. Detector_names are cht (channeltron) or pd (photodiode).

Change EPU and Mono Energy

- **moveE** *energy* (or **mv engy** *energy*) Energy units in eV
- **getE** Print current EPU / mono energy (in eV)
- **setE** *energy* Set user energy scale

Check the beam and the shutters, Energy correction

- **chkringon** Check ring current before each scan. Wait for injection and open shutters if needed.
- **chkringoff** Do not check ring current.
- **chkshon** Check shutters before each scan.
- **chkshoff** Do not check shutters.
- **chkengyon** Do energy correction before each scan. **chkengyoff** No energy correction.

If above macro is not working, use following commands to read in the macros:

- **qdo ~/lib/spec.d/site.mac**
- **qdo ~/lib/spec.d/fourc/conf.mac**

SPEC Command Quick Reference

Position

- **umv** *motor value*, **umvr** move one motor (relative)
- **uan**, **ummv**, **ummvr** move multiple motors (relative)
- **ubr** *h k l* go to *h k l* position
- **tw** *motor interval* tweak the motor position
- **wh**, **wa**, **wm** *motor* display the motor positions
- **lm**, **set_lm** for motor limits
- **set** *motor value* set the motor position
- **ca** *h k l* calculate the motor position of *hkl*
- **onsim** and **offsim** turn on or off the simulation mode

Scan

- **ct**, **uct** count
- **ascan**, **a2scan**, **a3scan**, **a4scan** absolute scan
- **lup** or **dscan**, **th2th**, **d2scan**, **d3scan**, **d4scan** relative scan
- **mesh**, **hklmesh** mesh scan
- **hscan**, **kscan**, **lscan**, **hklscan** index scan
- **timescan** *value* time scan

Orientation

- **setlat** set lattice constants
- **or0**, **or1**, **setor0**, **setor1**, **or_swap** setup coordinate system
- **setmode** set scan mode
- **sectors** set sectors

Setup

- **newfile** *name* open or create date file
- **setplot** linear scale: **setplot 1163** log scale: **setplot 1195**
- **counters** select default counter and monitor
- **plotselect** select which counter to plot
- **plot** plot the current scan
- **te** *[setpoint]* change or display sample temperature

Utility

- **print** or **p** print an expression
- **comment** or **com** insert comments
- **do_sleep** *sec* or **sleep(***sec***)** wait for a certain time
- **history** or **hi** list the command history
- **ls, pwd, cd, vi** unix command. Other unix command use: **u** *command*

Macros

- **do** and **qdo** read a command file
- **def** *name* define a macro
- **prdef** *name* print the content of a macro
- **undef** *name* remove a macro
- **lsdef** list the available macros

SPEC Motors for REIXS RSXS Endstation

tth	Two Theta (2θ)
th	Theta (θ)
chi	Chi (χ)
phi	Phi (ϕ)
x	X
y	Y
z	Z
detz	Detector Z
slit	SlitWheel
cryo	Cryostat
engy	Energy of EPU / Mono
ana	Analyzer (for horizontal or vertical polarization)
ath	Analyzer Theta
lian	Inclination Angle of the Linear Inclined Polarization

The following three macro motors are for calibration purpose only. Do not use them during measurements.

epugap	EPU Gap
m2p	M2 Pitch
grtp	Grating Pitch

SPEC Counters for REIXS RSXS Endstation

em	EMeter	Electrometer
mcp_r	MCP_REIXS	Microchannel Plate – REIXS Channel
tey_r	TEY_REIXS	Total Electron Yield – REIXS channel
cht_r	ChT_REIXS	Channeltron – REIXS channel
i0_r	I0_REIXS	Not used
picoam1	PicoAm1	Pico Ammeter 1
picoam3	PicoAm3	Pico Ammeter 3
bd3	I0_BD3	I_0 at Beam Diagnostic 3
ring	SR1_mA	Ring Current
t_k	Sample_T	Sample Temperature
e_fbk	E_Feedback	Energy Feedback

Useful Variables

CEN	Center of the FWHM
pl_xMAX	Peak position