

DESY Summer Student Program 2007

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Project:

Implementation and testing of the online code for 2D and 3D experiments.

Report:

I implemented the 2D and 3D experiments code to upgrade existing code for new type of experiments e.g. 2D EXAFS, XANES or beam profile.

To purpose a realization my project I learned programme PERL language, because all script of SPECTRA and ONLINE was written in this language. I also instructed with manual to SPECTRA and ONLINE.

The ONLINE program is used at many experimental stations of HASYLAB. ONLINE controls the beamline components, the monochromator and the diffractometer. It performs data acquisition and monitors the measurements. The default interfaces to ONLINE are the command interpreter and full screen menus. In addition there is a network interface which allows remote clients to interact with ONLINE via a tcp socket connection.

ONLINE can run in a simulation mode on any Linux PC.

SPECTRA is a program for data analysis, graphical presentation and experimental control. The on-line features are described in a separate note. Experimental stations use the on-line version of the code to control their beamline components, monochromators and diffractometers. Data acquisition and on-line monitoring is also done by SPECTRA.

I defined two virtual motors “emacs vm1, EXIT_SLIT_VERT” and “emacs vm2, EXIT_SLIT_HOR”. In this motors I defined instructions to control position of window slits.

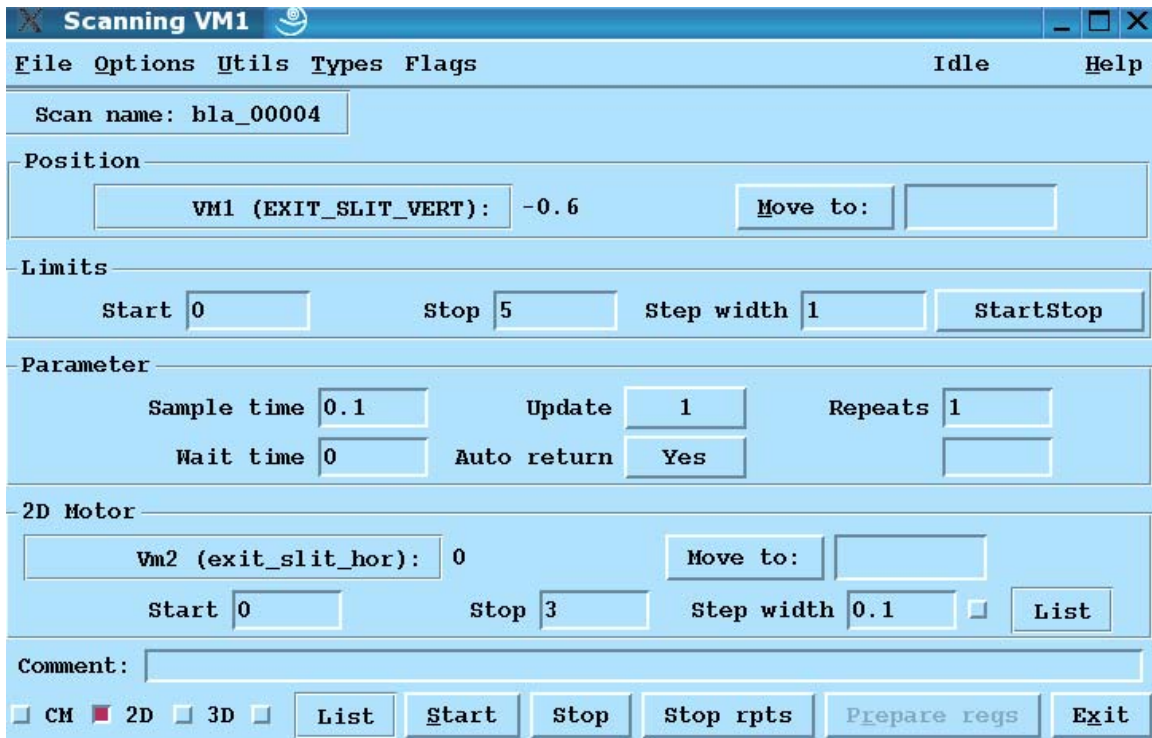
Motor	Pos	Move Slit	Limits	Register
MOT1	17	MOSTAB	[-54, 48]	-58565
MOT2	17	XSW	[-46, 54]	538047
MOT3	22	3D Scan	[-83, 2.2e+02]	90233
MOT4	0	Monitor	[-3.8, 22]	8106
MOT5	-0	emacs exp_ini.exp	[-17, 7.1]	-12831
MOT6	2	emacs vm1, EXIT_SLIT_VERT emacs vm2, EXIT_SLIT_HOR	[-5.5, 24]	59678
MOT7	-0	emacs	[-24, 27]	-129608
MOT8	-6	Perl scripts	[-76, 16]	0
MOT9	20.010769	CU_GRID	[-0.2, 81]	-717

```
11-Sep-2007 14:03:45: vrsn-save: cp -p /afs/desy.de/user/c/choment/  
/online_dir/vm1.pl /afs/desy.de/user/c/choment//online_dir/vm1_0013.pl  
11-Sep-2007 14:03:45: emacs /afs/desy.de/user/c/choment//online_dir/vm  
1.pl
```

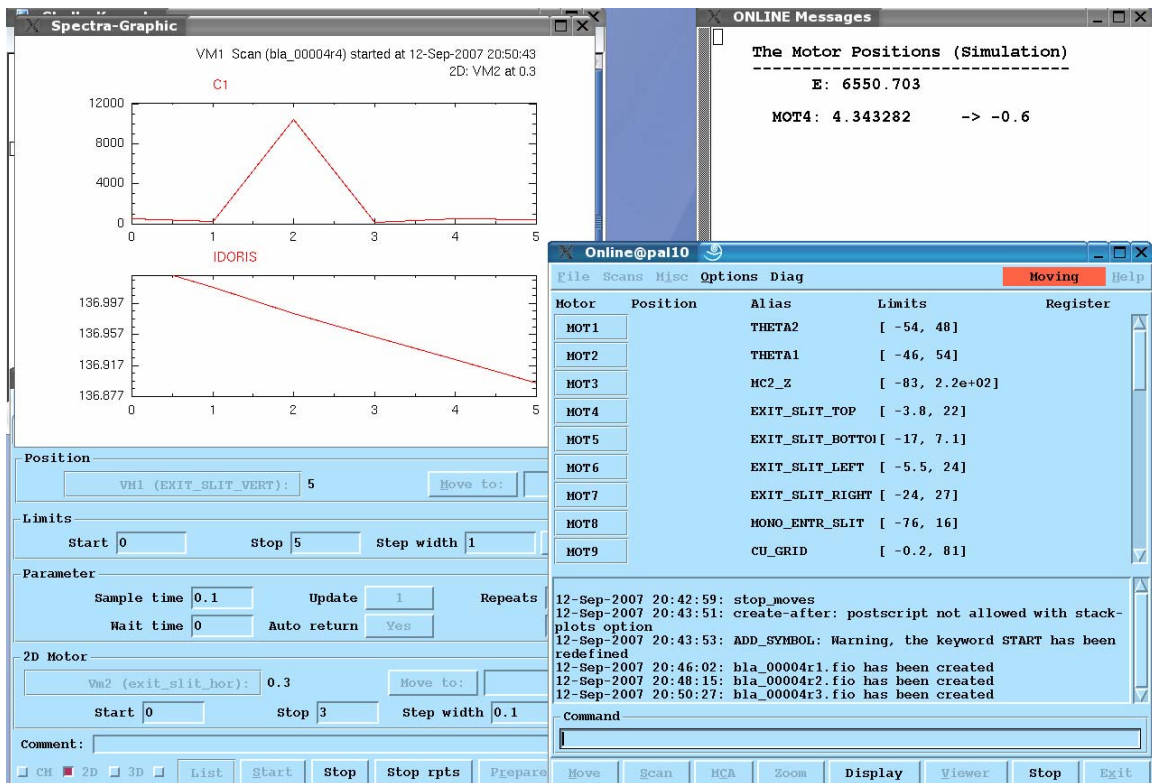
Command

Move Scan MCA Zoom Display Viewer Stop Exit

I used these virtual motors in 2D scan and simulated in ONLINE.



Unfortunately my modification doesn't work correctly.



I searched bugs in the virtual motors code but it is not found

I'm instructed with manual to beamline E4 and I learned in practical side servicing this beamline.

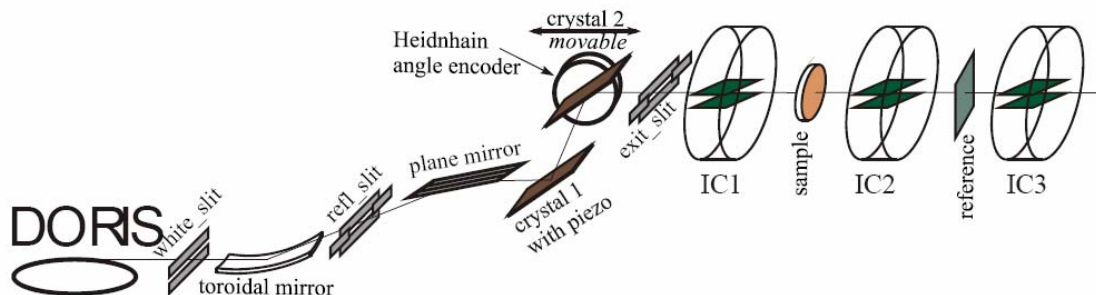
I made samples and put them in chamber. I'm instructed about vacuum pumps. I know how do vacuum in sample and references chamber.

I learned how to use program XAFSMASS to enumerate pressure of gases in ionization chambers and changed gases.

I know how to close hutch and switch on the beam shutter.

I learned how to check up and to set all necessary parameters to make measurements.

I participated in calibration of beamline E4.



I checked profile of the beam, searched the correctly position motors. We calibrated this beamline for long time but with success. I learned many things during this work.

I measured samples of titanium at beamline E4 during exercise week.

I learned how to make measurements in beamline A1 and also joined to experiment at beamlines X1 and CEMO. I instructed with manual for all this beam station.

I had a possibility to measure few samples at this beam stations.

I learned how to use program iffefit Athena. I checked results measurements in this program.

For example:

