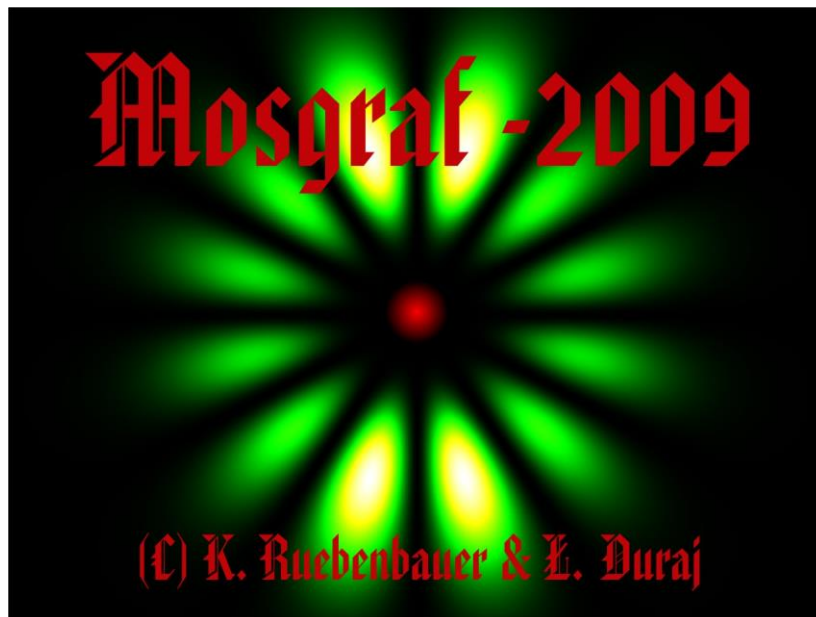# MOSGRAF-2009

MOSGRAF-2009 is a suite of applications designed to process Mössbauer data. It is based on the applications of the MOSGRAF suite available here as **old_mosgraf.zip** file. The MOSGRAF suite is no longer developed, albeit new programs of the fitting family have been added in the form compatible with the Microsoft Windows (©) systems. Documentation has not been upgraded, in general. The **old_mosgraf.zip** file unpacks to the image of the previously delivered CD-ROM except drivers for the spectrometer MsAa-3.

MOSGRAF-2009 has installation file "**mosgraf.exe**" available here together with some system extensions. It is designed for Microsoft Windows (©) systems 32 or 64 bit beginning since Windows-98. For systems older than Windows-XP one has to run "**extension98.exe**" (available here) prior to running "**mosgraf.exe**". A computer has to be attached to Internet, while running this installation system. For Windows-XP and higher systems it is desirable to run "**extensionXP.exe**" (available here) prior to running installation program "**mosgraf.exe**" as many systems are incomplete. It is advised to keep computer attached to Internet, while running this extension and during the proper installation – in all cases. The minimum hardware requirements are as follows: 486 processor (or any higher including 64 bit processors), free 512 MB RAM, 1 GB free disk space, keyboard, mouse, color monitor having not less than 800x600 resolution (256 color levels at least), broad-band connection to Internet. Some programs of the MOSGRAF-2009 run only under 32 bit systems, but they are added as surplus applications, and do not need to be installed. In fact, the most of them is not installed automatically like OFFLINE sub-system replaced by OFFLINE.64B (installed). Communication with the external oscilloscope within HAMDEV sub-system requires access to the COM2 port at the DOS level. However, this sub-system is obsolete for MsAa-4 spectrometers, as the oscilloscope is the internal device beyond MsAa-3 spectrometers.

Currently, there are following families of applications:

1. Data pre-processing systems, development tools and off-line spectrometer drivers:

A. CALFIT – application to calibrate spectrometer velocity with the help of iron spectrum

B. EXPORTER – application to extract data from the integrated binary file of the MsAa-3 spectrometer (compatible with MsAa-4 spectrometer as well)

C. LAMBDA – application to process γ-ray spectra (to estimate background under the resonant line)

D. LASERCAL – application to perform calibration of the velocity with the laser equipped Michelson-Morley interferometer by the standard fringe counting method

E. LASTIME and SILENT and SILENT1 (SILENT1 installs) – application to perform calibration of the spectrometer velocity by the novel time lapse method applied to the signal from the laser equipped Michelson-Morley interferometer (available for MsAa-4)

F. CORRECT/FITCOR – application to correct transducer error beyond standard PID method (available for MsAa-4) – it generates off-line files to be downloaded to the spectrometer

G. HAMDEV – application to derive transducer error by means of the external oscilloscope (obsolete for MsAa-4 system – replaced by CORRECT/FITCOR)

H. REFGEN – application to generate driving signal to be downloaded to the spectrometer

I. REFGEN30 – similar application as REFGEN, albeit extended for digital to analog converters of the driving system beyond 16 bits

J. RAW_COR – application to correct transducer error as in CORRECT/FITCOR albeit basing on the previously generated driving signal

K. EXPORTMS4 – system of applications to extract data from digital spectrometers

L. LASERCLOCK – application to calibrate clock used in the standard laser calibration

M. LASERMODES - set of applications to estimate modulation depth of the laser interferometric signal versus difference of the arms lengths – these applications are designed for multi-thread processors

N. MOSIEK TO MSAA – application to convert typical ASCII-formatted raw data into binary files compatible with the MsAa-x spectrometers and remainder of Mosgraf-2009

O. MARS – application to convert folded spectra obtained during Martian missions into folded spectra compatible with the fitting applications

P. ADDDATA – application to add up to 16 raw spectra

Q. CHTITLE – application to change header of the raw data

R. EXOTICMS – application to convert data from exotic spectrometers

S. LASSCOPE – set of two applications to perform velocity calibration with the laser photo-diode "raw signal"

T. CVREF – application to generate specialized (second transducer) constant velocity reference function

U. COILFIT – application to monitor pick-up coil signal

V. EXPRESS_LAMBDA – application to estimate background under the resonant line

2. Post-processing applications:

A. BAR64.B – application to prepare multiple plots of the relative line intensities (BAR remains not installed automatically)

B. DIFPLOT – application to make deviation plots of data

C. PLOT – application to make data plots

3. Auxiliary applications:

A. OFFLINE - 32 bit auxiliary system (does not install automatically)
B. OFFLINE.64B – 64 bit compatible auxiliary system consisting of 44 various auxiliary applications (mostly selected from MOSGRAF)
C. AREA_CAL – application to calculate normalized spectrum area
D. Q_RELAXG – application to calculate relaxation spectra due to the electric field gradient rotation

4. Fitting and data processing applications:

40 important applications (directly useable – some of them prepared only for the graphical mode Win32GL, but available in the "classical" dialogue mode as well) to fit, simulate and otherwise process data including auxiliary applications except those moved to 3.B. sub-system. All these programs run under 32 bit and 64 bit systems.
All fitting applications are available in the graphical mode within the Win32GL sub-system in addition to the "classical" dialogue mode. This mode operates fully under Windows-XP – Second Service Pack (32 or 64 bit) or higher system provided 512 MB (or more) RAM is available for MOSGRAF-2009. **An application to fit synchrotron spectra in the energy domain is added. It conforms to the ESRF source for ^{57}Fe 14.41-keV line.**

5. Auxiliary graphics and text editors:

A. *Complex binary file* (CBF) system to store and retrieve incomplete graphics
B. *Any data series system* to plot columnar ASCII files versus selected column
C. *Editors*: two text editors – one internal and link to the system *notepad.exe* editor

AVAILABILITY

The MOSGRAF-2009 is free for all owners of the MsAa-4 spectrometers. It could be acquired separately upon permission from copyright owners (see below). In order to access files to be downloaded one has to get password upon request to: sfrueben@cyf-kr.edu.pl
Above files are accessible together with freely accessible THIS DOCUMENT at: www.elektron.up.krakow.pl/mosgraf-2009
Link is available at: www.elektron.up.krakow.pl

MOSGRAF-2009 could be installed on any computer belonging to the laboratory having above permission including home computers of the employees. Redistribution beyond above limits is not allowed without permission. Source files of the numerical applications are enclosed. They can be modified at the user own risk. A majority of the numerical applications is designed to be compiled/linked under Lahey-Fujitsu Fortran-90 (©) v. 4.00.

A DEMO version is available free without any restrictions. It is fully compatible with the complete version except for the fitting and data processing applications (4). A folder with above applications including help files is provided, but EXE/FOR files are missing.

Installation hints

If you do not have installed DOTNETFIX environment you have to install it prior to setting up Mosgraf-2009 (these notes apply to either DEMO or FULL version). Version 3.51 or higher is required. Registered users could download the following files from the Mosgraf-2009 page: **dotnetfx35.exe** and **NETCFSetup35.msi**. They are available as well from the official Microsoft pages for free – including more recent versions. Run first **dotnetfx35.exe** and later on **NETCFSetupv35.msi** – being connected to the Internet during these runs. Afterwards you can install Mosgraf-2009 – either DEMO or FULL version. Both versions could be installed as well in any order – to different folders. The first execution has to be performed usually from the ADMIN level – the same statement applies to switching between DEMO and FULL versions. For multiple user systems the best way is to make installation from the ADMIN level. Upgrades (of both versions) could be done in the following ways: 1. installation to the same folder without removing older version (preserves user files and …lasercal\lasercst.cfg file), 2. de-installation of the older version and installation of the newer one without removing Mosgraf-2009 folder (it is equivalent to the previous method except for the user files – latter are removed), 3. de-installation and removal of the Mosgraf-2009 folder prior to the installation – equivalent to the "virgin" installation (user files removed). The last method installs DEFAULT …lasercal\lasercst.cfg file, and hence this file has to be chosen and edited (inspected) during first calibration run with the LASERCAL. *It is strongly recommended to keep copies of the user files and a copy of the used lasercst.cfg file outside Mosgraf-2009 trees.* For the "virgin" installation DEFAULT folders are proposed. Installation files (applications) have the following names: **mosgraf-2009d.exe** for DEMO and **msg*yymmdd*.exe** for the FULL version with *yymmdd* denoting approximate release date. The old_mosgraf.zip file is available to the registered users as well. During installation (DEMO and/or FULL version) user has option to choose folders. It is recommended to make installation in the root of the main disk c:\ as some configuration files are set for such destination(s), and hence they do not require edition provided above rule is obeyed. Each version (DEMO and/or FULL) installs in a separate folder.

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