

LaboTex

Version 3.0

The Texture Analysis Software for Windows

Menu and Toolbars Commands

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1. Menu and Toolbars Commands

1.1 File menu commands

File menu offers the following commands:

New Sample/Project	Creates a new sample for existing or a new project.
Open Sample	Opens an existing sample.
Change/New User	Changes current user or creates a new user.
ODF Export	Export of ODF data as ASCII files
PF Export	Export of PF data as ASCII files
EPF/PPF/COR/POW Export	Export of original (or converted to LaboTex format) pole
	figures data
• Print	Prints a 2D figure(s).
Print Setup	Sets margins.
Crystal Symmetry	Selects current crystal symmetry.
Recent Sample	Opens recent sample.
• Exit	Exits LaboTex.

1.1.1 New Sample/Project command (File menu)

Use this command to create a new sample in LaboTex. Select the type of experimental files and file or files to process in the New Sample Dialog Box.

New Sample	×
Choose Experimental Data (LaboTex Experimental Pole Figure Files) © EPF O PPF O SOR O TSV O PLF O CON O HKL Selected : 0	Crystal Symmetry O (Cubic)
C1_Triclinic.epf D6_Hexagonal.epf C2_Monoclinic.epf O_Cubic.epf C3_Trigonal.epf O_Cubic_arb.epf C4_Tetragonal.epf O_Cubic_c2.epf C6_Hexagonal.epf O_Cubic_d2.epf D2_Orthorhombic.epf T_Cubic.epf D3_Trigonal.epf D4_Tetragonal.epf	Project Name Demo
Path C:\LaboTexd\USER\Demo version.LAB\EPF\	Project Name : Demo
Choose Defocussing Correction Correction (On/Off) Correction Data from File (COB POW DEB ASC) Correction Data from Formula	Sample Name O_Cubic O_Cubic_d2
Cor(5x5).cor Path C:\LaboTexr(\USEB\Demo version LAB\COB\	
Info	Sample Name :
Cancel Create of Binary File in LaboTex For	rmat (Corrected Pole Figure(s) (CPF))

Specify the type of experimental data for processing – select proper radio button:

- <u>EPF</u>
- PPF
- <u>SOR</u>

Other (user defined – non LaboTex format, for example: TSV,PLF,CON,HKL¹) (only 4 additional, non-LaboTex formats, may be simultanously accessible)
2) Select file(s) (for many files select with CTRL key).

- 3) Select file for correction (if necessary):
 - <u>COR</u>
 - <u>POW</u>

4) Write new name for project or select an existing project.

Note:

- Do not use following symbols in project and sample name : \\/:?"<>|
- Up to 15 characters can be used in project and sample name.
- 5) Write name of sample or accept name prompted by LaboTex.

6) Start calculation and creation of objects:

Merge Experimental Files and Conversion to CPF
Project Sample
Demo Cu-xga
Crystal Symmetry
0-Cubic
Cell Parameters (Relative)
a 1.0 b 1.0 c 1.00 \approx 90.0 β 90.0 γ 90.0
Description
Cu pik 111 Oscillation = OFF ; Position = 0.0 mm ; Range = 0 mm ; Time Interval = 5.00 s
PF Data Files
CU_111B.EPF hkl Counter-clockwise
β_r \neg β_c \neg
Calculations Progress
Merge (files) 2
Conversion
RUN END

- creation CPF objects from experimental pole figure: merge experimental files and conversion.

¹ To make other formats accessible for creation of CPF files you should:

i) select EDIT menu in LaboTex

ii) select LaboTex Options

iii) select Data Formats

iv) select this format in one of "selection windows" 4 - 7

v) select "new sample" - selected format is now active.

ODF Calculations from a Set of Single Orientations							
Project-	Sample						
Demo	S_ORIENT						
Crystal Symmetry	Cell Parameters (Relative)						
0-Cubic	a 1.0 b 1.0 c 1.0						
Angle Convention for Data							
Bunge	α 90. β 90. γ 90.						
Grid Cells for Output ODF	le Unit Weight						
5.0*5.0 V	egrees 🔽 Yes 💌						
Descriptions							
Dane 27.03 57.69 18.43 test: 27.03 57.69 18.43							
Single Orientations Files	Calculations Progress						
S_ORIENT.SOR	Merge (files)						
	No of single orien.						
RUN	END						

For example:

You would like read data in Rigaku 'ASC' data format files:

- 1) use only one pole figure in one file,
- 2) extension of file has to be ASC (for example: 53110.ASC, 53200.ASC, 53211.ASC)
- 3) to make ASC files accessible for creation of CPF files you should:
 - i) select EDIT menu in LaboTex
 - ii) select LaboTex Options
 - iii) select Data Formats
 - iv) select "ASC Rigaku ASC format (1PF/file)" in one of "selection windows" 4 7 then

4) select "new sample" (from File menu or third icon from toolbar),

select "ASC" data format, if you do not use defocusing correction,

please select "off" for "Correction"

5) select ASC pole figures files by the mouse clicking

6) select the proper crystal symmetry for your sample

Shortcuts

Toolbar: Keys: C

CTRL+N

- creations ODF from single orientations data: merge experimental files and calculation ODF. Click "RUN" for start ODF calculation.

1.1.2 Open sample command (File menu)

Use this command to open an existing sample.

Open Project and Sample	- User : Piotr Ozga	×
Project Name	Sample Name Ghost Ghost_1x1 Ghost_Single Ghosts O_Cubic O_Cubic_arb O_Cubic_c2 O_Cubic_d2 O_Cubicm O_Cubicw OD_GOSS OD_GOSS OD_GOSSa	
[C)K Cancel	

Shortcuts :

Toolbar: Keys: ALT+O

1.1.3. Change/New User (File menu)

Use this command to open a dialog to change current user or to create a new user.

When you create "New User", LaboTex makes new subdirectory in directory USER with user name and next LaboTex creates in this catalogue the all structure of user subdirectories. LaboTex copies also all sample files from main EPF and COR directory to user EPF and COR directory. Similarly LaboTex copies files from directory SETUP and DEMOFILE.

Choose User or Register New Us	ser 🔀
Choose User	Add New User
	Albert Smith Instalation Progress
OK	Cancel

Note:

- Do not use following symbols in user name : \mathbb{W} :?"
- Up to 15 characters can be used in user name.

Shortcuts :

Toolbar : Keys: ALT+N

1.1.4. ODF Export

The option lets on the saving ODF data to the ASC file. The user can choose one from among three data formats:

ODF Export (Phi 1 Section) ... ODF Export (Phi 2 Section) ... ODF Export (Phi 1, Phi 2, Phi, Odf) ...

a) ϕ_1 section - "ODF Export (Phi 1 Section)..." :

(ی

print to file ϕ_1 section of ODF. First value in first line is a ϕ_1 value. Next data in first line are values of ϕ_2 angle while first column contains values of Φ angle:

```
ODF projection PHI1
PHI1 PHI2 --->
PHI
| ODF values
|
V
```

For example (ODF section for $\phi_1=0$):

.0	.0	5.0	10.0	15.0	20.0	25.0	30.0	 60.0	65.0	70.0	75.0	80.0	85.0	90.0
.0	.90	1.02	1.31	1.72	2.08	2.17	2.08	 2.05	2.10	1.98	1.61	1.23	.96	.86
5.0	1.80	1.68	1.81	2.30	2.53	2.40	2.01	 1.97	2.35	2.43	2.06	1.58	.97	.65
10.0	2.17	2.03	2.24	2.73	2.61	2.03	1.40	 1.20	1.32	1.33	1.14	.93	.65	.48
15.0	2.34	2.19	2.38	2.74	2.26	1.43	.81	 .49	.48	.41	.32	.27	.20	.16
20.0	2.56	2.32	2.27	2.18	1.48	.81	.42	 .18	.21	.22	.22	.21	.16	.12
70.0	2.24	2.24	2.36	2.15	1.47	.81	.42	 .19	.22	.23	.23	.21	.17	.14
75.0	1.95	2.06	2.50	2.64	2.09	1.32	.75	 .47	.47	.41	.31	.24	.20	.18
80.0	1.67	1.81	2.34	2.74	2.55	1.98	1.36	 1.20	1.37	1.41	1.15	.86	.69	.61
85.0	1.25	1.37	1.84	2.43	2.70	2.51	2.06	 1.97	2.38	2.42	1.97	1.48	1.07	.86
90.0	.88	.99	1.27	1.66	2.03	2.13	2.07	 2.07	2.13	2.03	1.66	1.27	.99	.88

b) ϕ_2 section - "ODF Export (Phi 2 Section)...":

Print to file ϕ_2 section of ODF. First value in first line is a ϕ_2 value. Next data in first line are values of ϕ_1 angle while first column contains values of Φ angle:

```
ODF projection PHI2
PHI2 PHI1 --->
PHI
| ODF values
|
V
```

Example is analogically as for ϕ_1 section.

c) φ1, φ2, Φ, ODF value - ''ODF Export (Phi 1 ,Phi 2, Phi, Odf)	.'':
Print to file ODF in format: ϕ_1 , ϕ_2 , Φ , ODF (four values in each lin	le).

-		
For	example.	
1 01	chample.	

•••••		••••••	
25.00	0.00	0.00	0.451965E+00
20.00	0.00	0.00	0.414515E+00
15.00	0.00	0.00	0.553926E+00
10.00	0.00	0.00	0.909632E+00
5.00	0.00	0.00	0.637786E+00
0.00	0.00	0.00	0.592089E+00
PHII	PHI2	PHI	ODF

1.1.5. PF Export

Export of pole figures (CPF,RPF,NPF,APF,IPF) as ASCII files. Select PF(s) which you want save in ASCII file and press button OK. Default extension is 'TPF' and default place is directory 'WORK'. An example window is shown below:

PF Export as Text file	×
Job No : Job01	
Choose Pole Figures :	
	7
al-88b - CPF - 200	
al-88b - CPF - 111	
al-885 - CPF - 311	
al-88b - NPF - 200 al-88b - NPF - 220	
al-88b - NPF - 111	
al-88b - NPF - 311 al-88b - BPE - 200	
al-88b - RPF - 220	
al-88b - RPF - 111	
al-88b - APF - 311 al-88b - APF - 112	
al-88b - APF - 1-34	1
Lai-886 - INV - 100	1
OK Cancel	

An example of file contains 220 CPF pole figure:

EXPERIMENTAL - CORRECTED POLE FIGURE

220.	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0
0.0	1.67	1.66	1.67	1.68	1.67	1.70	1.70	1.73	1.74	1.74	1.74	1.74	1.77	1.77	1.78	1.80	1.80	1.82	1.82
5.0	1.19	1.18	1.21	1.21	1.25	1.28	1.31	1.34	1.40	1.45	1.51	1.55	1.62	1.67	1.72	1.76	1.84	1.88	1.89
10.0	0.73	0.73	0.74	0.75	0.77	0.80	0.85	0.91	0.97	1.05	1.15	1.27	1.37	1.50	1.65	1.79	1.90	1.99	2.08
15.0	0.53	0.54	0.53	0.55	0.57	0.60	0.63	0.68	0.74	0.82	0.92	1.06	1.20	1.38	1.60	1.81	2.04	2.23	2.33
20.0	0.47	0.47	0.47	0.49	0.51	0.52	0.56	0.59	0.66	0.75	0.84	0.97	1.15	1.34	1.63	1.92	2.23	2.49	2.60
25.0	0.44	0.43	0.44	0.46	0.47	0.51	0.54	0.59	0.65	0.73	0.84	0.98	1.16	1.40	1.66	2.01	2.32	2.59	2.74
30.0	0.41	0.41	0.42	0.44	0.46	0.49	0.53	0.58	0.65	0.75	0.87	1.02	1.21	1.45	1.72	2.00	2.28	2.47	2.57
35.0	0.40	0.40	0.41	0.42	0.44	0.47	0.51	0.56	0.63	0.72	0.84	0.99	1.19	1.41	1.65	1.84	2.00	2.08	2.13
40.0	0.46	0.45	0.46	0.46	0.47	0.49	0.50	0.56	0.60	0.67	0.77	0.89	1.06	1.24	1.43	1.57	1.60	1.60	1.58
45.0	0.67	0.69	0.64	0.62	0.58	0.57	0.58	0.58	0.60	0.65	0.71	0.79	0.91	1.06	1.20	1.25	1.23	1.20	1.16
50.0	1.34	1.29	1.17	1.01	0.88	0.79	0.72	0.68	0.66	0.66	0.68	0.73	0.81	0.90	1.01	1.02	0.98	0.92	0.87
55.0	2.65	2.55	2.16	1.78	1.43	1.19	1.01	0.90	0.79	0.73	0.71	0.70	0.75	0.80	0.85	0.86	0.81	0.74	0.72
60.0	3.26	3.18	2.76	2.31	1.93	1.64	1.37	1.17	0.99	0.85	0.78	0.72	0.71	0.72	0.75	0.75	0.71	0.67	0.64
65.0	2.04	2.02	1.88	1.72	1.64	1.55	1.47	1.31	1.13	0.95	0.81	0.72	0.66	0.65	0.68	0.68	0.67	0.65	0.62
70.0	0.89	0.86	0.84	0.85	0.89	0.98	1.07	1.10	1.03	0.90	0.78	0.67	0.61	0.57	0.59	0.62	0.65	0.65	0.64

1.1.6. EPF/PPF/COR/POW Export

Export of original pole figures data. If source pole figure data are in non-LaboTex formats, LaboTex exports data in LaboTex formats: EPF, PPF, COR or/and POW (original data are converted to LaboTex format).

1.1.7. Print (File menu)

A 2D object(s) is printed.

Note: Print Command print only left (L) window in Compare Mode .

Shortcuts:

Toolbar : 🛃 Keys: ALT+P

1.1.8. Print Setup (File menu)

Margins are set.

Note: This set is temporary only (in current LaboTex session or to the next change). To change it as a new default use LaboTex Options (<u>Edit Menu</u>)

Shortcuts :

Keys: ALT+R

1.1.9. Crystal Symmetry (File menu)

Opens dialog to change a current crystal symmetry.

Crystal Symmetry	×
Crystal Symmetry	
C1-Triclinic C2-Monoclinic D2-Orthorhombic C4-Tetragonal D4-Tetragonal T-Cubic O-Cubic C3-Trigonal D3-Trigonal C6-Hexagonal D6-Hexagonal	
OK Cancel	

Note: This set is temporary only (in current LaboTex session or to the next change).

To change it as a new default use LaboTex Options (Edit Menu)

Short	cuts:
Toolba	ar: 🕂
Keys:	ALT+T

1.1.10. Recent Sample command (File menu)

Use the project/sample names listed at the bottom of the Recent Sample position menu to open the last four samples you processed or opened from menu.

1.1.11. Exit command (File menu)

Use this command to finish LaboTex session. The Close command on the application Control menu can also be used.

Shortcuts

Mouse:

Double-click the application Control menu button.



Keys: ALT+F4, ALT+x

1.2. Edit menu commands

Copy to Clipboard (EMF)	Copies 2D figure(s) to the clipboard as Enhanced Metafile
Copy to Clipboard (Bitmap)	Copies 2D figure(s) to the clipboard as Bitmap
• Image File (BMP,TIF)	Save LaboTex object(s) as Bitmap file
Clear Selected	Deletes selected PF or ODF (deletes from PF,INV or ODF containers).
Clear All	Deletes ODF or all PFs/INVs (empty all containers).
Color	Changes current colors set.
• Font	Changes current font.
Arrangement	Sets objects arrangement on the screen and printer.
LaboTex Options	Sets initial (default) LaboTex options.

Edit menu offers the following commands:

1.2.1. Copy to Clipboard (EMF)

Use this command to copy selected LaboTex object(s) onto the clipboard as a enhanced metafile (EMF). This command is unavailable if no data have been currently selected. Copying LaboTex object to the clipboard replaces the contents previously stored there. This option is active only when 'Fill' is turn off.

1.2.2. Copy to Clipboard (Bitmap)

Use this command to copy selected LaboTex object onto the clipboard as a bitmap. This command is unavailable if no data have been currently selected. Copying LaboTex object to the clipboard replaces the contents previously stored there. Before copy to clipboard LaboTex ask you about resolution. You can choose:

```
i) printer resolution - 2000*2000dpi
```

or

ii) screen resolution - current screen resolution.

Shortcuts:

Toolbar: Keys:



1.2.3. Image File (BMP,TIF)

Ir	nage Prope	erties			x
	– Image File				
	Filename	Image		Change	
	Path	C:\w300	00		
	Image Fo	ormat	Disk Free Space	Image File Size	
	ВМР	•	9088 MB	12.0 MB	
	Image Prop	perties gend			
	Width (p	oixels)	Height (pixels)	Resolution (DPI)	
	2 000	•	2 000 🔺	300 🔺	
	200 (5000	200 6000	50 1200	
			SAVE Cance	el	

Use this dialog to save LaboTex object(s) as bitmap file (only left window is saved in compare mode). You can choose :

- image format (BMP, TIF non-compressed),
- image width (200-6000 pixels),
- image height (200-6000 pixels),
- image resolution (50-1200 DPI).

1.2.4. Clear Selected (Edit menu)

Use this command to remove the currently selected object on the screen. This command is unavailable if there is no object currently selected.

Shortcuts:

Toolbar: Keys:

ALT+E

Ж

1.2.5. Clear All (Edit menu)

Use this command to remove all objects from containers.

Shortcuts:

Toolbar: Keys: ALT+L

1.2.6. The choice of the font

Opens dialog to change current font.

Note: This set is temporary only (in current LaboTex session or to next change). To change it as a new default use LaboTex Options (Edit Menu)

Shortcuts:

Keys: ALT+F

1.2.7. The choice of the color

Isolines Colors				×
Choose Set of C	olors for Isolines or	Clic for Change Co	lors in Choosed Sel	t of Colors
	4	7	10	13
2	5	8		
3	6	9	12	15
		OK]	Cancel	

It opens dialog to change current colors set. Click on the proper button 1-15 to choose set of colors. You can change colors in each colors set. In this purpose, please click on color area above buttons 1-15. It opens new dialog to change colors in colors set.

Kolor	? ×
Kolory podstawowe:	
	•
15	
Kolory niestandardowe:	
	Odc.: 1 Czerw.: 249
	Nas.: 228 Ziel.: 81
Definiuj kolory niestandardowe >>	Kolor/Pełny Jaskr.: 125 Nieb.: 17
OK Anuluj	Dodaj do kolorów niestandardowych

Colors 1-14 are for isolines and to fill whereas color 15 is to drawing of the axis and of circles. The colour 16 is intended the as background color when the option "Fill" is active. The position of colours 15 and 16 marked on the drawing below.

Note: This set is temporary only (in current LaboTex session or to next change). To change it as a new default use LaboTex Options (Edit Menu)

Shortcuts

Toolbar: Keys:

	* *
AL	

1.2.8. LaboTex Object Arrangement



It opens dialog to change current objects arrangement on the screen. It can change arrangement for xPF, INV objects and arrangement for sections of ODF projections.

Note:

- This set is temporary only (in current of LaboTex sesion or to next change).
- To change it as a new default use LaboTex Options (Edit Menu)

Shortcuts:

Toolbar: ALT+A

1.2.9. LaboTex Options

Opens dialogs for sets initial (default) LaboTex options:

- Miscellaneous
- ODF Calculation
- Active Isolines
- Captions and Draw
- 3D View
- Arrangement
- Isoline No
- Print Setup
- Data Formats
- LaboTex conventions.

1.2.9.1. LaboTex Options - Miscellaneous

LaboTex - Options									
Captions and Draw 3D View Arrangement Isoline No Print Setup Data Formats Miscellaneous 0DF Calculation Active isolines Isoline Colors Set Colors Set No 1 New									
Times New Roman New									
Symmetry O (Cubic) New New Cubic) New									
(Optimal on the localhost) New									
C:\LaboTexd\USER\Demo version.LAB\TMP\									
Data Files Directory (EPF,PPF,SOR files) New C:\LaboTexd\USER\Demo version.LAB\EPF\									
Defocussing Correction Files Directory (COR, POW) New C:\LaboTexd\USER\Demo version.LAB\COR\									
OK Anuluj									

It sets miscellaneous LaboTex options as new default.

For change click on the New button :

- Isoline Colors Set Number. It opens dialog to change color set. It is available to choose from 15 colors set and to modify all color sets (see -" The choice of the colour").
- Current Font. It opens dialog to set default font in LaboTex session.
- Initial Symmetry. It opens dialog to set default crystal symmetry.
- Hexagonal Convention. It sets permanently LaboTex axis and angles convention for hexgonal system (move to LaboTex Conventions from ver. 3.0).
- Temporary directory. This directory is used by LaboTex for creation of temporary files during calculations. Optimal choice – set temporary directory on the local host.
- Data directory. This directory is default for experimental data file (EPF, PPF, SOR, ...)
- COR directory. This directory is default for correction files (COR and POW format)

LaboTex - Options							?)				
Captions and Dr	aw	3D V	/iew	Т	Arran	gement	t				
Isoline No		Data Formats									
Miscellaneous	Miscellaneous ODF Calculation /										
Defa	Defaults for Calculation Parameters										
Maximal Number of Iterations 3											
1.1	- i - i	· ·		•	1						
1 10) 20 3	0 40	50	60	70						
RP (Max) - Max Error Finishing C	imal Rela alculation	ative n (%)			_	1.0					
1 () ()	-	1	'		1						
0.1	2.5	5	7.5		10.						
dRP (Max) - Max Error Finishing Ca	imal Diffe alculation	erential n (%)				1.0					
11 77											
0.1	2.5	5	7.	.5	10						
			0	к		Anulu	i				

l	.aboTex	- 0	ptio	ons											1	<u> </u>
	Cap	View Arrangemer				ment										
	Isol	ine	No		1	F	rint	Seti	ир			D	ata	Forr	nats	
	Misc	ellar	neou	IS	Ì	00) F C	alci	ulati	on		A	ctiv	e iso	olines	
	No of Isolines				Pre	ss E	Butte	on ti	o Ac	tiva	ate la	solir	ne			
	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
				Nu	mbe e	er of equa	pre: I nu	ssec mbe	l bu er of	tton isol	s ha ines	is to	be			
										C	K			A	nuluj	

1.2.9.2. LaboTex Options – ODF Calculations

It sets new default options for ODF calculations:

- Maximal Number of Iterations per Iteration Cycle. Any number in the interval 1 to 70 can be set. Default is 30.
- RP(Max) Maximal Relative Error Finishing Calculation in %. It can be set RP from 0.1% to 10%. Default is 1% (see: error definition).
- dRP(Max) Maximal Differential Error Finishing Calculation in %. dRP can be set in the interval from 0.1% to 10%. Default is 1%.(see: error definitions).

1.2.9.3. LaboTex Options – Active Isolines

For each isoline number (chosen from 1 to 14 in LaboTex Options – Isoline No) the active isolines are selected . It sets the new default.

Notice: number of active isolines can not be greater than the chosen number of isolines



1.2.9.4. LaboTex Options – Captions and Draw

It selects which captions and other draw elements will be present on the figures xPF (CPF,NPF,RPF,APF), INV and ODF. Axis captions contain up to 3 characters. These captions are displayed in "3D View" window too. The size of sample name captions of xPF or INV can be changed. This size is set as % of pole figure radius. The line width of picture draw (pen width) can be changed in the range 0 to 20. The 0 value specified as pen width sets line width to single pixel. Default is 0.

LaboTex - Options		?>
Isoline No Miscellaneous Captions and Dra	Print Setup ODF Calculati aw 3D Vie	Data Formats on Active isolines w Arrangement
Distance C Very Far C Far C Normal C Near C Very Near	- Hotate Angle (d ○ 5 ○ 10 ○ 15 ○ 30 ○ 45	egj C 60 C 315 C 90 C 135 C 180 C 270
Cycle Angle 90 135 180 270 360 • user break	Cycle Step 0 0.1 1 2.5 5 15 45	Other Options ✓ Axis On ✓ Top Black Contour ✓ Bottom Black Cont. Height ○ Low ○ Normal ○ High
Color C Blue (C Red (C Green (C Yellow	○ Cyan ○ Light Blue ● Isoline Color	Projection Perspective Parallel
		OK Anuluj

1.2.9.5. LaboTex Options – 3D View

Sets new defaults for miscellaneous options for 3D View window (in brackets - default):

- Distance (normal)
- Rotate angle (30 deg)
- Cycle angle (user break)
- Cycle step (2.5 deg)
- Color (isoline color colors set identical as for 2D isolines)
- Axis view (on)
- View projection: perspective or parallel (perspective)
- Height of xPF or INV isolines.(normal)
- Top black contour black isolines in space (on)
- Bottom black contour black isolines on the bottom surface (on)

Miscellaneous	1
ODF Calculation Active isolines Captions and Draw	v
3D View Arrangement Isoline No Print Setup	Σį
XPF and INV	
Automatic - Optima Anargement	
Custom	
Number of Objects in Horizontal Direction	
© 1 O 5 O 9 O 13 O 17 O 21	
O 2 O 6 O 10 O 14 O 18 O 22	
O 4 O 8 O 12 O 16 O 20 O 24	
_ ODF	
Automatic - Optimal Arrangement	
Automatic - Vertical Close to Horizontal	
OK Anului	
ooTex - Options ?	<u>×</u>
Captions and Draw 3D View Arrangement	1
Miscellaneous ODF Calculation Active isolines	Ì
Isoline No Print Setup Data Formats	1
Choose Initial Number of Isoline	- 1
Choose million with ber of tabline	
×PF INV ODF	
xPF INV ODF 0 1 0 1 0 1 0 2 0 2 0 2	
xPF INV ODF 0 1 0 1 0 2 0 2 0 2 0 3 0 3 0 3 0 3	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 4 0 4	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 4 0 4 0 5 0 5 0 6 0 6	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 4 0 4 0 5 0 5 0 6 0 6	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 0 4 0 4 0 0 5 0 5 0 0 6 0 6 0 0 7 0 7 0 0 8 0 8 0	
*PF INV ODF 0 1 0 1 0 1 0 2 0 2 0 2 0 3 0 3 0 3 0 4 0 4 0 4 0 5 0 5 0 5 0 6 0 6 0 6 0 7 0 7 0 7 0 8 0 8 0 8 0 9 0 9 0 9	
xPF INV ODF 0 1 0 1 0 1 0 2 0 2 0 2 0 3 0 3 0 3 0 3 0 4 0 4 0 4 0 4 0 5 0 5 0 5 0 5 0 6 0 6 0 6 0 6 0 7 0 7 0 7 0 7 0 8 0 8 0 8 0 9 0 9 0 9 0 9 0 9 0 10 0 10 0 10 10 10	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 4 0 4 0 5 0 5 0 6 0 6 0 7 0 7 0 8 0 8 0 9 0 9 0 10 0 10	
NV ODF 0 1 0 1 0 2 0 2 0 2 0 3 0 3 0 3 0 4 0 4 0 4 0 5 0 5 0 5 0 6 0 6 0 6 0 7 0 7 0 7 0 8 0 8 0 8 0 9 0 9 0 9 0 10 0 10 0 10 0 11 0 11 0 11 0 12 0 12 0 12	
xPF INV ODF 0 1 0 1 0 2 0 2 0 3 0 3 0 0 3 0 3 0 3 0 4 0 4 0 4 0 5 0 5 0 5 0 6 0 6 0 6 0 7 0 7 0 7 0 8 0 8 0 8 0 9 0 9 0 9 0 10 0 10 0 10 0 11 0 11 0 11 0 12 0 12 0 12 0 13 0 13 0 13	
*PF INV ODF 0 1 0 1 0 1 0 2 0 2 0 2 0 2 0 3 0 3 0 3 0 3 0 4 0 4 0 4 0 4 0 5 0 5 0 5 0 5 0 6 0 6 0 6 6 6 0 7 0 7 0 7 7 7 0 8 0 8 0 8 0 9 0 10 0 10 0 10 10 10 0 11 0 11 0 11 0 11 0 12 0 12 0 12 12 0 14 0 14 0 14 14	
NV ODF 0 1 0 1 0 2 0 2 0 0 3 0 3 0 3 0 4 0 4 0 4 0 5 0 5 0 5 0 6 0 6 0 6 0 7 0 7 0 7 0 8 0 8 0 8 0 9 0 9 0 9 0 10 0 10 0 10 0 11 0 11 0 11 0 12 0 12 0 12 0 13 0 13 0 13 0 14	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	

1.2.9.6. LaboTex Options – Arrangement

Dialog is opened to change current arrangement of objects on the screen. It can change arrangement for xPF, INV objects and arrangement for sections of ODF projections.

1.2.9.7. LaboTex Options – Isoline No

Dialog is opened to change initial number of isolines. It can change independently number of isolines for xPF, INV and ODF objects.

LaboTex - Options			? <u>×</u>
Captions and Dra Miscellaneous Isoline No	w 3D View ODF Calculation Print Setup	A Ac Da	trangement tive isolines ta Formats
Margins (mm)			
Left	3	mm	
Right	3 •	mm	
Тор	3	mm	
Bottom	3 *	mm	
- Spaces Betwe	en Objects		
Vertical	0 -	mm	
Horizontal		mm	
	0	ж	Anuluj

LaboTex - Options	<u>?</u> ×
Captions and Draw 3D View Arrangement	Isoline No
Miscellaneous ODF Calculation Activ	ve isolines
Print Setup Uata Formats LaboTex Co	onventions
Choose Additional Data Formats and their Default Set	tings
Labo I ex Experimental Pole Figure Files	
2. 🗌 Cclockwise 💿 None 🔿 90 deg. 🔿	180 deg.
LaboTex Preliminary Corrected PF Files	PPF
3. 🗖 Cclockwise 💿 None 🔿 90 deg. 🔿	180 deg.
LaboTex Single Orientations Files	SOR
4. 🔲 Cclockwise 💿 None 🔿 90 deg. 🔿	180 deg.
UXD - D-8 Discover Bruker (1PF/File)	 UXD
5. 🔲 Cclockwise 💿 None 🔿 90 deg. 🔿	180 deg.
BW1 - PHILIPS XPert binary data format	■ RW1
6. 🗖 Cclockwise 💿 None 🔿 90 deg. 🕥	180 deg.
NJA - Seifert ASCII data format	▼ NJA
7. 🗐 Ci-clockwise 💿 None 🛛 90 deg. 🕥	180.deg
RAW - popLA Format files	▼ RAW
If background data is greater than pole figure data th	ien :
⊂ Set '0' value 💿 Make all da	ata positive
ОК	Anuluj

1.2.9.8. LaboTex Options – Print Setup

It sets the margins on the picture (window).

1.2.9.9. LaboTex Options - Data Formats.

It sets the data formats. This data formats are used in Open Sample dialog. LaboTex formats: EPF,PPF,SOR are fixed. User can choose 4 additional data formats from more than 30 non-LaboTex data formats. You can find on the page: labotex.com/format.htm current list of formats which are available in LaboTex..You can also for each data format change registration convention from LaboTex default. The possibility of accommodation of a registration convention for pole figures are following :

- \circ counter-clockwise;
- +90 deg pole figure rotate;
- +180 deg pole figure rotate.

You can use this option also when you incorrect install sample in the goniometer, receive sample from laboratory using other convention etc. When background data of pole figure is greater than pole figure data for some values LaboTex can do:

- a) negative values of pole figure after correction for background are set to zero.
- b) adds to all pole figure data absolute value of the lowest values of pole figure after correction for background (LaboTex makes all data positive);

User may choose option a) or b) in "LaboTex Option" ----> "Data Formats". Default is option a).

LaboTex informs user's when it finds data for which background data are greater than pole figure data and LaboTex display percent these data :



LaboTex - Options	?	×
Captions and Draw 3D View 7 Miscellaneous 0DF Calculat Print Setup Data Formats	Arrangement Isoline No tion Active isolines LaboTex Conventions	
Hexagonal Axis Convention	• 🖄	
Pole Figure Plot Convention		
 Start from 	m North	
C Start from West C	Start From East	
Start from	m South	
	OK Anuluj	

1.2.9.10. LaboTex Options – LaboTex Conventions

- 1) Hexagonal Convention. It sets permanently LaboTex axis and angles convention for hexagonal system.
- The possibility of accommodation of a plot convention for pole figures. The choice among different conventions you can find in "LaboTex Options" ----> "LaboTex Conventions". You can choose start plot pole figures from "N","E","S" or "W".

For example: if you would like plot pole figures with rolling direction "RD" in "E" you should choose in "LaboTex Conventions" start plot pole figures from "E" and next you should change description of Y axis to "RD" in "Captions and Draws" (LaboTex Options). Please also delete old description of X axis. You can also write any other description of your axis.

Pole figures : Start from North



The same pole figures when start is from East:



1.3 View menu commands

View menu offers the following commands:

Single Window Mode	Shows data in the single window on the screen.	
Compare Window Mode	Compare mode. It shows data in two windows (left	
	L, right R) on the screen.	
• 3D View	Opens a new window and shows data in 3 dimension	
	coordinates.	
Show InfoBox	Opens (closes) an information window.	
Magnification	Magnifies the selected object.	
Basic Region	Shows only the basic region of PF or INV.	
High Resolution(ODF)	Shows ODF data in high resolution.	
Number of isolines	Sets numbers of isolines for PF,INV or/and ODF figures.	
• Fill	Fills 2D plots	
User Defined Section	ODF(s) or Pole Figure(s) section (cuts)	
Grid (Pole Figure)	Shows grid for pole figure(s) defined by user	

1.3.1. Single Window Mode (View menu)

Objects (xPF, INV, or ODF) are shown in the single window on the screen.

Shortcuts:

Toolbar: Keys: ALT+S

1.3.2. Compare Window Mode (View menu)

Objects (xPF, INV, or ODF) are shown in two windows (L - left, R - Right) on the screen. Pole figures type objects (CPF, NPF, RPF, APF), inversion pole figure type objects (INV) and orientation distribution function (ODF) type objects can not be displayed in one window simultaneously. You can display different type objects using 'Compare Mode'. In the compare mode you can work in two windows using different or the same type of objects. In this mode following options are not active:

- calculation (ODF, APF, INV);
- creation of new sample (CPF);
- quantitative analysis.

Shortcuts:

Toolbar: Keys:

LT+C

1.3.3. 3-D View (Menu View)

It opens new window and shows LaboTex object in 3 dimensional space. The program includes on-screen graphic presentation of calculated ODFs, PFs and INVs in the form of contour levels (isolines) shown in 3D space. 3D objects plotted on the screen are optionally:

- increased or decreased (Distance menu),
- shifted (Shift menu)

- rotated (Rotate menu)
- animated (Cycle menu).

It is possible change colors set individually for "3D View" in color menu, and other "3D View" draw options in Options Menu (axis view, black contour view, height 3D objects, kind of projection). Commands: Refresh, Copy to Clipboard, Print 3D and Exit there are in Miscellaneous Menu.

Note: In Compare Mode "3D View" is possible for left window only.



1.3.4. Show InfoBox (View menu)

Opens (Closes) an information window (InfoBox).

Information window contains:

- 1) The following isoline areas where the current isoline properties can be changed:
 - color
 - on/off switches of drawn isolines (buttons with numbers 1 to 14)
 - values of isoline levels (PF, or INV or ODF)
 - decimal digits number of displayed decimal digits in values of isolines
 - all button activates the drawing of all isolines
 - none button terminates the drawing of all isolines
 - sort sorts isolines by values
 - fill background color (If you would like set permanent background color of filling then choose: LaboTex Options ⇒ Miscelaneous ⇒ Isoline color set ⇒ New ⇒ color number 16.
 - fill isoline color (normal, black, white)
 - mode :
 - automatic : LaboTex calculates values of isolines
 - manual : User can define values of isolines manually
 - file : Values (colors, state) of isolines are read from file.

PF Container's	s Info 📃	Close
La - Kana a Wasana la		
- Isolines/Levels Color No Value	Color No V	alue
1 0.6		2.8
2 0.9	– –	3.2
3 1.2		3.5
4 1.5		3.8
5 1.9	12	4.1
6 2.2	13	4.4
2.5	14	4.8
Dec. Digit 📘 🗧	None All	Sort
- Fill		
	NORMAL	-
Background Color	Isoline	
AUTOMATIC		-
PF Isolines Mode / Load PF Isolines		
Color 🔽 🗸	/alue 🗖	State
Save PF Isolines		
Smoothness 🔽	vlin. —	Max.

- save saves current properties of isolines: values, colors, state (select the save option)
- 2) Global minimal and maximal values of shown
- 3) Information about selected object (click on the to select it):
 - HKL, XYZ or projection
 - sample name
 - project name
 - describing text
 - date
 - minimal and maximal values for selected object
 - PF, INV or ODF ranges
 - crystallographic system and cell parameters

Global PF(s) values Minimal 0.251 Maximal 5.091 PF Properties (Click on the PF) hkl (xPF) Sample 100 (CPF) O_Cubic Project. Text Description Demo Data (YMD) 1999 11 26 (H:M) 17:27 xPF Value Maximal 5.091 Minimal 0.251 PF Range 0.000 β. 0.000 C2 90.000 02,-*₿*_E 355.000 **△**α 5.000 Δβ 5.000 Crystallographic System and Cell Param. Crystall, system: O (Cubic) 1.00 1.00 1.00 С a h 90.00 90.00 90.0 в v 23

objects object

4) Captions

- HKL or INV
- type of PF object : CPF, RPF, NPF, APF, INV
- sample name (caption under PF picture)
- axis maximal 3 characters captions:
 - X horizontal
 - Y vertical
 - Z perpendicular
- visible turns drawing on/off for: isoline descriptions
- minimum and maximum values
- date

Captions
 hkl of PF Type of PF (CPF,RPF) Captions under PF Axis
X TD Y RD Z Z
Legend
🔽 Visible
✓ Isoline Descriptions
Min. Max.
✓ Date

Shortcuts:

Toolbar:	0
Keys:	ALT+I

1.3.5. Magnification (View menu)

Magnification of Selected Object (by double mouse click).

Shortcuts:

Toolbar: Keys: <u>S</u> ALT+M

1.3.6. Basic Region (View menu)

Shows basic region of PF. Basic region means half circle of PF in case of monoclinic sample symmetry, quarter circle of PF in case of orthorhombic sample symmetry or 2D radial section of xPF.

Example : Pole figures for different basic regions:



Shortcuts

Toolbar:	
Keys:	

X ALT+B

1.3.7. High Resolution

Shows ODF objects in high resolution or low resolution. ODF can be drawn in high resolution in case the source PFs were measured in a grid less than 5 x 5 degree (2.0×2.0 degree from version 3.0). This option speed draw of object on the screen. Volume fraction calculation should be made for high resolution mode!

Shortcuts:

Toolbar: Keys:



1.3.8. Number of Isolines



Sets number of isolines for each container type:

- 1) PF objects
- 2) INV objects
- 3) ODF objects.

Note:

- To set default value for this option see: Edit Menu → LaboTex Option → <u>Isoline No</u>
- To set default for active isoline(s) see: Edit Menu → LaboTex
 Option → <u>Active Isolines</u>
- To set active isoline(s) see: <u>Infobox</u>

Shortcuts:

Toolbar: **No** Keys: ALT+N

1.3.9. Fill

Use this command for filling 2D plots (please sort isolines before!) Example of action of "Fill" command:



Filling options.

You can change options of filling:

- Open infobox (click on the
- find fill segment (below box of decimal digits)

You can change :

• background color (click mouse on the background color window)

icon)

• isoline color (normal, black , white, continuous).

If you would like set permanent background color of filling then choose:

LaboTex Options \Rightarrow Miscelaneous \Rightarrow Isoline color set \Rightarrow New \Rightarrow color number 16.

PF Container's Info			
- Isolines/Levels			
Color No Value	Color	No V	/alue
			2.8
2 0.9			3.2
3 1.2			3.5
4 1.5			3.8
5 1.9		12	4.1
6 2.2		13	4.4
2.5		14	4.8
Dec. Digit 📘 🛨	None	All	Sort
Fill			
	NORM	AL	-
Background Color	ls	oline	
AUTOMATIC			•
PF Isolines Mode	/ Load	PF Isol	ines
Color 🔽	/alue		State
Save P	F Isolin	es	
Smoothness 🔽	Min	-]	Max.

"Continuous" 2D and 3D visualization of pole figure, inverse pole figure, ODF section and ODF (full color visualization on the base of the value of each point of the object. In 3D visualization height in each point is a function of PF,IPF or ODF value). Very good option in presentation and in publication.

WARNING: This option needs installation of OpenGL Driver for your graphic card! Printing plots in this option may be longer. Choose: 'Fill' next 'Open InfoBox' and in fill option change from 'Normal' to 'Continuous' in Isoline Combo Box.

Examples for option 'Continuous' in 2D and 3D view:

ODF Section - 3D (1)



ODF Section - 3D (2)



Pole Figure - 3 D (1)



Pole Figure - 3 D (2)



Pole Figures - 2D (1)



Pole Figures 2D (2)



Inverse Pole Figure - 2D



The meaning of fill options in 3D ODF visualization:

 \circ $\;$ Fill off (option are non-active, only isolines are drawing):



 \circ Normal (isolines+transparent filling):



• Black (opaque filling):



• White (transparent filling):



 \circ $\;$ Continuous (transparent filling, transparence is function of ODF value):



The meaning of fill options in 2D visualization (IPF example):

• Fill off (fill options are non-active, only isolines are drawing):



• Normal (color filling and isolines are in the same color):



• Black (color filling and black isoline):



• White (color filling and white isoline):



• Continuous (color filling in function of PF, INV/IPF or ODF values, no isolines):





Filling of pole figures when are presented in basic region.

• Example for orthorhombic sample symmetry



• Example for monoclinic sample symmetry



WARNING: LaboTex has user defined legend. Default is "Automatic". User may change to "Manual" or to any user defined files with isoline values. For example and details see to "Determination of Volume Fraction of Texture Components Using LaboTex" manual. User can save in every time current isolines. It is very important compare objects the same type for the same set of isolines.

1.3.10. User Defined Sections (PF, ODF)

ODFs Section/Cuts (active when ODF projection is displayed):

- a) **ODF line sections (cuts)** user define two points $(\phi_{\Box} \Box, \Box \Phi, \phi_2)$ in Euler Space :
 - Start Point
 - End Point

ODF - 2D User Defined Diagrams			
• Section © Misorientation © Skeleton L.			
Section/Diagram Parameters			
Start Point 0 - 54 - 45 -			
P1 P2			
End Point 0 🔺 90 🔺 0 🔺			
<u>β</u> 1 Φ β2			

LaboTex shows ODF intensity along section defined on the base these points. User can also choose initial points from orientations database (when click on the 'Start Point' or 'End Point' button database is available .Comparison up to 12 ODFs is possible:



- **b**) **skeleton lines** user can create such diagrams as: alpha-fiber, beta-fiber, gamma fiber etc.. User can choose skeleton lines on the base of Euler angle (Phi1, Phi or Phi2) and:
 - i. maximal intensity;

ii. integral intensity.

User can also change ranges in which LaboTex looking for maximal odf value or made integration (from +/-2 to +/-20 deg). User can make comparison up to 12 of skeleton lines; **Example:**

Options: 'No fill', 'All black' (for black and white paper):



Option: 'Fill':



c) misorientation histograms. User define start point $(\phi_{\Box} \Box, \Box \Phi, \phi_2)$ in Euler Space from which LaboTex shows misorientation diagrams.

Γ	Misorientations Diagram			
	Start Calculation	1 🗧		
	Build Misorientation Histogram for Current Start Point	Histogram Step (deg)		

Misorientations diagrams are calculated on the base of ODFs in range 0 to 80 deg from start point (start orientation). LaboTex shows intensity which is the releative intensity i.e.intensity relate to intensity of random sample (I=I(sample)/I(random sample)) for the same range of misorientation angle. User can make comparison up to 12 misorientations histograms. User can also change histogram step in range 1 to 10 degrees.



There are many options to **optimalize quality of diagrams** :

• scale (in percent of maximal intensity value: 0.1 up 100%);

- Magnification -		
0.0%	50%	100%
1 1 1 1		1.2.1
Range: 88.5	% of Maximal Int	ensity Value

• colors (defined by user);

• types of lines (14 types with different dots+solid and width /0 to 10 pixels/);

Choose line		
Line Properties		
Line Line	e Styles: Line Width	
💿 Line 1 🗧	2 🗧	
🔿 Line 2 🗔		
C Line 3 🔤	······	
C Line 4 -	0 📑	
🔿 Line 5 🕂	0 🗄	
OLine 6 🔤		
C Line 7 🔤		
🔿 Line 8 🔤		
🔿 Line 9 🔤		
C Line 10 🔤		
C Line 11 -		
🔿 Line 12 🔤		
🔿 Line 13 🔤		
O Line 14 🔤		
OK	Cancel	

• line options (all solid, all black, black countours);

Γ	Line Options		
	All Solid	All Black	Black Countours

• fill.

User can also save current parameters and/or samples.

Parameters from File Load Parameters/SampleSfrom File
Alpha-Fibre
Save Current Parameters/Samples
🔽 Parameters 🔲 Samples (2-12)

User can choose ODFs for comparison using appriopriate comboboxes and buttons on the tools window from right side of diagram:

CODF No	o 1	color
	? Job1 🔽	
Project	wzorce-new	line
Sample	Axial-ODF 🗾 💌	
DDF No	2	
<u>On/Off</u>	job	color
2	? Job1 💌	
Project	wzorce-new	line
Sample	Austenite-tri	
ODF No	3	color
On/Off		
3		
Project	wzorce-new	line
Sample	Aust-e	
00511		
) 4	
On/Off	job job	color
On/Off	job ? Job1	
On/Off	job iob job Job1 wzorce-new	color
ODF No On/Off 4 Project Sample	job iob job Job1 wzorce-new Axial-ODF	color line
ODF No On/Off Project Sample	job iob job vzorce-new Axial-ODF	color
ODF No On/Off 4 Project Sample ODF No On/Off	job job job wzorce-new Axial-ODF job	color line
ODF No On/Off Project Sample ODF No On/Off	job igob igob wzorce-new Axial-ODF 5 job igob igob igob	color line color
ODF No On/Off 4 Project Sample ODF No On/Off 5 Project	job i job i job wzorce-new Axial-ODF 5 job i job i job i job vzorce-new vzorce-new vzorce-new	color line color
ODF No On/Off 4 Project Sample ODF No On/Off Froject Sample	job i job i job wzorce-new Axial-ODF 5 job i job i	color line color line
ODF No On/Off 4 Project Sample ODF No On/Off 5 Project Sample	job i job i job wzorce-new Axial-ODF 5 job ? Job1 wzorce-new IFsteel 6	color line color line
ODF No On/Off 4 Project Sample ODF No On/Off Sample ODF No ODF No ODF No	job i job wzorce-new Axial-ODF 5 job ? Job1 wzorce-new IFsteel 6 job	color line color line line color
ODF No On/Off 4 Project Sample ODF No On/Off 5 Project Sample ODF No On/Off 6	job interfection in the second state is a seco	color line color line color
ODF No On/Off 4 Project Sample ODF No On/Off 5 Project Sample ODF No ODF No On/Off 6 Project	job interview interview	color line color line color line

The first ODF is current ODF hence user can not change its (it is grayed). Next 2 to 12 ODFs user cam choose from ODF with the same crystal symmetry.

LaboTex shows also cuts for pole figures. User defines start and end points on the pole figure and Labotex shows intensity along this section

2D Pole Figure Diagrams		
Pole Figure S	Section Parame	ters
• Arc O	Radial 🔿 Rad	dial (full) View
Start Point	50 -	0 •
	CZ,	βı
End Point	50 🔺	360 📑
	CL _E	$\boldsymbol{\beta}_{\text{E}}$

You can also save current parameters. You can also copy and paste these diagrams to other applications or you can made images in 'BMP' ot 'TIF' format (menu 'Edit').

Parameters from File
10degcircle
Load Section Parameters from File
Save Current Section Parameters

There are following cuts available:

• **'Arc'** (in range 0 to 360 degrees):



• **'Radial'** (in range 0 to 90 degrees):



• **'Radial (full)'** (in range 90 - 0 - 90 degrees) :



LaboTex shows position of section line on the pole figure only when button 'View' is pressed

2D Pole Figure Diagrams			
Pole Figure Section Parameters			
C Arc C Radial © Radial (fair View)			
Start Point	90 📩	90 📑	
	CK ^I	β_{I}	
End Point	90 🔹	270 🚊	
$\alpha_{\rm e}$ $\beta_{\rm e}$			
Parameters I	irom File		
10degcircle 💌			
Load Section Parameters from File			
Save Current Section Parameters			
Line Options			
All Solid All Black Black Countours			

Up to 12 pole figures can be comparised. All information about comparised PFs are displayed in info window from left side of diagram (see below). All pole figures which sections are displayed **have to be choosen before button '2D' has been pressed**. If you choose more than 12 pole figures then LaboTex shows sections only for first 12 pole figures. There are similar options to **o**ptimalize quality of diagrams as in ODF cuts.

Pole Fig	jure No 1	
No 🔽	hki ype job ? 111 APF 1	color
Project	cube	line
Sample	a4	
- Pole Fig	ure No 2	
No 2	hkl type job	
Project	wzorce	line
Sample	Austenite-powde	
Pole Fig	jure No 3	color
No		
Project		line
Sample		
Pole Fig	jure No 4	
No 4	hkl type job	
Project		line
Sample		
- Pole Fig	jure No 5	
No 5	hkl type job	
Project	<u> </u>	line
Sample		
Pole Fig	jure No 6	
No 🕞	hkl type job	color
Project		line
Sample		
- Pole Fig	jure No 7	
No 7	hKI type job	
Project		line
Consta		

1.3.11. Grid (Pole Figure)

User can define grid for alpha angle and/or grid for beta angle of pole figure.

Grid - Pole Figu	res			×
Grid for alpha	const. ——			
10 -	90 🗼	10 1	0 -	3 -
Start Angle	End Angle	Grid Step	Pen Width	Pen Width (Printer)
Dot	Solid	Short Lo	ng	
	1	-	🗌 Sho	w grid
Grid for beta c	onst. ———			
0 -	360 🔺	10 -	0 -	3 •
Start Angle	End Angle	Grid Step	Pen width	Pen Width (Printer)
Dot	Solid	Short Lo	ng	
		-1	- 🗆 Sho	ow grid
Cross		or 1 - 0		
			ancel	

Examples:

Option 'Cross'



Pole figure with grid for alpha and beta angles:



1.4. Calculation menu commands

Calculation menu offers the following commands, which make it possible to calculate Corrected PF (CPF), Orientation Distribution Function (ODF), Normalized PF(NPF), Recalculated PF (RPF), Inverse PF(INV):

•	Experimental PF to CPF	Creations of CPF from EPF data.
٠	Experimental Single	Calculations of Orientation Distribution
	Orientation Data to ODF	Function (ODF) from Experimental Single
		Orientations Data Set(s).
•	CPF to ODF,NPF,RPF,INV	Calculations of Orientation Distribution Function(ODF),
		Normalized PFs, Recalculated PFs, Inverse PFs from
		Corrected PFs.
•	ODF to APF	Calculations of Additional PF from ODF.
•	ODF to INV	Calculations of Inversion PF from ODF.
•	ODF to ODF	Symmetrization of ODF.
	(ODF symmetrization)	
•	ODF to SOR	Calculations of set of single orientations on the
		base of current ODF and creations of SOR file.

1.4.1. Experimental PF to CPF (Calculation menu)

Generation of Corrected Pole Figures (CPF) from experimental pole figure(s) data (files type EPF, PPF or in other formats).

For details please see to New Sample/Project command (File menu).

Shortcuts:

Toolbar: LT+C

1.4.2 Experimental Single Orientation Data to ODF(Calculation menu)

Calculations of Orientation Distribution Function (ODF) from experimental single orientations data set(s) (files type SOR or in other formats). For details please see to New Sample/Project command (File menu).

Shortcuts:

Toolbar:	
Keys:	

ALT+S

1.4.3 CPF to ODF, RPF, NPF, INV (Creations of ODF, Calculation Menu)

Calculations Orientation Distribution Function (ODF), Normalized PF (NPF), Recalculated PF (RPF), Inverse PF (INV), from Corrected PF (CPF). To begin ODF calculation press button **'Run calculation'**. Some default values for CPF parameters can be changed (for current calculation) if necessary before pressing 'Run calculation':

1) select pole figures for ODF calculation (using buttons {HKL})



In above example will be created third job. All pole figures will be used in ODF calculation (PFs with pressed buttons: {100}, {111}, {211}, {113}).

2) an experimental pole figure data can be transformed to the presupposed sample symmetry before ODF calculation. Select the desired kind of symmetrization (select proper button). You can either make symmetrization after ODF calculations (ODF symmetrization).



3) the sample used for X-Ray analysis may be mounted on the goniometer to a slight misalignment. Sample can be either cut out of the bulk sample not precisely. You can correct these effects by rotation of PF. Select proper rotation angle of PF(s) (change slider position).

Pole	e Figure	e (hkl)	1	00	•	(4)
Rota	tion of	PF step	p 2.5	deg-	_	1
N 🖸 🖉	Apply to	o all PF	s			0.0
_						
. I.			-Y .			1
-90	-60	-30	0	30	60	90
Lowe	er Rang	ge(0.0-)	85.0 c	leg)-	_	
🗹 A	pply to	all PFs	;		Γ	0.0
Ū						
j.	io 20) 30 4	0 50	60	70 ŝ	io 90
Ú Ú Uppe	10 20 er Rang) 30 4 ge(5.0-3	0 50 90.0 d	i 60 leg)-	70 ŝ	. io`90
Uppe	10 20 er Rang) 30 4 ge(5.0-3 all PEs	0 50 90.0 a	i 60 leg)-	το έ	0°90
0 O Uppe ☑ Aj	10 20 er Rang pply to) 30 4 ge(5.0-) all PFs	0 50 90.0 d	i 60 leg)-	70 8	0`90 90.0
Uppe	10 20 er Rang pply to) 30 4 ge(5.0-3 all PFs	0 50 90.0 d	i 60 leg)-	70 έ	90.0
0 O ■ Al	10 20 er Ranı pply to) 30 4 ge(5.0-) all PFs	0 50 90.0 c	60 eg)-	70 8	90.0

4) If experimental data in the certain range angles are in your opinion incorrect you can remove it from ODF calculations. Select proper ranges of PF(s) - lower and upper ranges of pole angle (change slider position).

5) select the maximal number of iterations per iteration cycle (change slider postion). It finishing ODF calculations if calculation aren't terminates by RP or dRP limits

6) select the <u>RP</u> value limit (change slider position). Definition of RP value limits you can find in chapter: "**Definitions of fit error in ODF calculation**"

7) select the <u>dRP</u> value limit (change slider position). Definition of dRP value limits you can find in chapter: "**Definitions of fit error in ODF calculation**"

	Calcul	ation Para	ameters	
Maxim per Ite	nal Numbe ration Cyc	er of Itera de	ations	30
1	т. т.	Υ.,		
1	10 20	30 40	50 6	60 70
RP (M Error f	tax) - Ma Finishing (ximal Rel Calculatio	ative n (%)	1.0
· · `	2			
0.1	2.5	5	7.5	10.
dRP (I Error f	Max) - Ma Finishing (T	x. Differe Calculatio	ntial n (%)	1.0
- -	, , , , , , , , , , , , , , , , , , ,			I
0.1	2.5	5	7.5	10

Note: It is recommended that the above parameters be altered only by experienced users !

Shortcuts:

Toolbar: Keys: ALT+O

1.4.4. ODF to APF (Calculation menu)

Calculation of Additional Pole Figures (APF) from ODF. Choose proper indices for APF and next click button: "Start APF Calculation".

Additional Pole Figures (APF)	×
Choose APF hkl for Calculation h 0 + 1 0 + 1 0 + 1 0 + 1 0 - 2 3 4 4 5 5 6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Calculated APF hkl
START APF CALCULATION	END

1.4.5. ODF to INV (Calculation menu)

Calculations of Inverse Pole Figures (INV) from ODF. Choose proper indices for APF and next click button: "Start INV Calculation".

Inverse Pole Figures (INV) Calculation	×
Choose Inverse PF Vector for Calculation X Y 0 1 2 3 4 5 6 5 6 6 7 7 7 8 9 9 YZ: 131 Calculation Progress (100.0 %)	Calculated XYZ 100 010 001 131
START INV CALCULATION	END

Shortcuts:

Toolbar: Keys:

2	
ALT+I	

Å

1.4.6. ODF to ODF. ODF Symmetrization (Calculation menu)

If you find that ODF has higher symmetry than current sample symmetry then you can create ODF with higher sample symmetry using this option (when you create ODF with pole figures you can also make calculation of ODF once more assumed higher sample symmetry of pole figures – see to point 1.4.3)

ODI	Symmetrization	x		
	Choose ODF symmetrization			
	C Symmetrization to monoclinic			
	 Symmetrization to orthorhombic 			
	Symmetrization to axial			
	OK Cancel			

New ODF (ODF after symmetrization) is placed in next free job. Original ODF you always can find in job nr 1. Maximal number of jobs is equal 9.

1.4.7. ODF to SOR. (Calculation menu)

LaboTex creates set of single orientations on the base of current ODF. User can choose number of single orientations from 10000 to 9999999.

ODF to File with Single Orientations (SOR)	×
Filename a2.SOR Change	
Path G:\w3000\USER\SMITH.LAB\W0RK	
Crystal Symmetry O (Cubic) Sample Symmetry Triclinic	
Number of Single Orientations to Generate 500 📩 x 100	0
Random Orientations	
Start Cancel No of single orien. 2510	000

This option is important for user which modelling deformation (VCS users) etc.

User can also generate random set of single orientation using this option. SOR file creates by LaboTex user can input as a new sample and he can make ODF calculation. Examples:

ODF creates on the base set of 500,000 single orientations generates with 'Random' option:



Section of pole figure {111} calculated on the base above 'Random' ODF:



Comparison pole figure for real texure free (random) sample (red) with pole figure generates from 'random' ODF creates on the base set of 500,000 single orientations (blue):



1.5. Analysis menu commands

•	Orientation Analysis	Opens an orientation analysis.
•	Show PF(s) or/and ODF(s)	Displays average PFs value or/and ODF value
	&Value(s)	from cursor(s) position(s).
•	Choose (HKL) [UVW]	Opens the window to choose orientation in
		(HKL)[UVW] indices.
•	Orientations Type Database	Opens the window to add or edit orientation in database.
•	Sort Orientations from Database by PF or ODF Values	Opens the window with sorted out orientations from database by PF or ODF values.
•	Show Next Orientation from Database	Changes current orientation to the next orientation in database.
•	Show Previous Orientation from Database	Changes current orientation to the previous orientation in database.
•	Automatic Show of Orientations from Database	Automatic display of orientations from database (sequentially).
•	Near(HKL)[UVW] orientations	Displays list which contains near (HKL)[UVW] orientations to orientation for current cursor position.
•	Quantitative Analysis – Integration Method	Opens the dialog for IM
•	Quantitative Analysis – Model Functions Method	Opens the dialog fpr MFM

Analysis menu offers the following commands :

1.5.1. Orientation Analysis (Analysis menu)

Opens appropriate orientation analysis – using the cursor(s).

Note: In current version of LaboTex orientation analysis is non implemented for Inverse Pole Figures..

Shortcuts:

Toolbar: Keys: ALT+O

1.5.2. Show PF(s) or/and ODF(s) Value(s) (Analysis menu)

Activates the display of sums PF value(s) or/and ODF value in cursor(s) position(s) (for more than one of PF objects - average of sums).

Example (Compare Mode - PF in right window, ODF in left window) :

(L)=13.11 (R)=0.21

 $(\mathbf{R}) = 13.1$ - average of sums pole figures values in cursor positions (for all xPF object in right window).

(L) = 0.21 - ODF value in cursor position (for ODF in left window).

Shortcuts:

Toolbar:

V	

Keys: ALT+V

1.5.3. Choose (HKL)[UVW] (Analysis menu)

Opens the window allowing to select orientation in (HKL)[UVW] indices and you can see for active window: cell parameters, orientation type (Euler angles and Miller indices), basic region, orientation(s) in basic region (Euler angles and Miller indices). LaboTex shows orthogonal vectors {HKL}<UVW> for indices lower than 15.

HKL - UVW	×
HKL - UWW Choose (HKL) [UVW] H K L U V W 0 0 0 \bullet + \bullet + \bullet + \bullet + \bullet + 0 0 1 1 1 \bullet + \bullet + \bullet + \bullet + 0 0 1 <t< td=""><td>X Orientation Type (HKL) [UVW]</td></t<>	X Orientation Type (HKL) [UVW]
(HKL): {001} [UVW]: <100>	(-1 0 0 0 1 [90.00, 90.00, 270.00] (0 0 1 0 1 0 [0.00, 0.00, 270.00] (0 -1 0 1 0 [0.00, 0.00, 270.00] (0 -1 0 [1 0 0] [180.00, 90.00, 270.00] (-1 0 0 0 1 [1 270.00, 90.00, 270.00] (-1 0 0 0 1 [1 270.00, 90.00, 270.00]
Current Cell Parameters a 1.000 b 1.000 c 1.000 α 90.000 β 90.000 У 90.000	[0 0 0 1] [1 0 0] [1 80.00, 180.00, 0.00] [1 0 0] [0 -1 0] [0.00, 90.00, 90.00] [0 1 0] [0 0 1] [90.00, 90.00, 0.00] [0 0 1] [0 -1 0] [90.00, 0.00, 0.00] [0 0 1] [0 1 0] [180.00, 0.00, 0.00] [0 0 1] [0 1 0] [270.00, 0.00, 0.00]
Database Orientation Type Name Orientatons Type Database {0 0 1}<100> {0 0 1}<100>cube	(0 0 1) 1 0 0 (0 1 0) 1 0 0 (360 00 90 00 0 00 (max. Indices = 15)
Add to Database Delete Orientation from Database	CANCEL OK

Shortcuts:





1.5.4. Orientations Type Database (Analysis menu)

Opens the window allowing to add or edit orientations in database.

ientations Type Database - Crystal Symmetry Systems	Number of Orientations						
Cubic	24						
Database No Orientation Tupe Name	P1 P P2						
1 {1 1 0 1 1 2 brass 2 {1 1 2 1 1 2 brass 2 {1 1 2 1 1 2 brass 2 {1 1 2 1 1 1 > copper 3 {0 0 1 1 0 > cube 4 {1 1 0 0 0 1 goss 5 {0 0 1 1 0 > cube 4 {1 1 0 0 0 1 goss 5 6 {1 1 0 1 1 > > 7 {1 1 1 1 1 > > > 8 {1 0 1 5 2 > > > 9 {5 2 5 1 - 5 > >	54.74 90.00 45.00 -90.00 35.26 45.00 0.00 0.00 0.00 90.00 90.00 45.00 -45.00 0.00 0.00 35.26 90.00 45.00 -45.00 0.00 0.00 35.26 90.00 45.00 90.00 54.74 45.00 -105.79 45.00 90.00 15.23 47.12 68.20 ▼						
Delete Edit	New New (HKL) <uvw></uvw>						
Orientation Euler Angles Orientation Type Name Angle Part Name { 0.0, 0.0, 0.0}	P₁ Φ P₂ (-360 - 360) (-180 - 180) (-360 - 360)						
Add/Change Cancel							
Close							

1.5.5. Sort of Orientations from Database by PF or ODF Values (Analysis menu)

Opens the window with assorted orientations from database by PF (when PF object are displayed on the window) or ODF values (when ODF projection or section is displayed on the window).

Shortcuts:

Status Bar: Keys: ALT+S

Examples for "SORT" for pole figures and "SORT" for ODF.

Sort for pole figures:

PF values for orientation	on from Data	abase (So	ort by PF \	/alue)					×
Symmetry : O-Cubic									
- Orientation Type					⊢ PE	values for	poles of orienta	ation (HKL)[UVW]	
No Orientati	on Type Name	e	PF (ave	erage)		65	β	PF - Value	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1 0 0> cub 0 0 1> gos: 1 0 0> 1 -5 1> 1 1 0> 2 -2 1> 2 -2 1> 2 -2 1> 1 -3 1> 1 -1 0> 5 2 -5 >	e s	54.059 53.836 38.490 38.487 34.976 34.834 34.834 31.366 30.965 30.079		+	IKL=100 90.0 90.0 IKL=111 54.7 54.7 54.7 54.7 IKL=211	CPF Sample: 1 0.0 270.0 CPF Sample: 1 45.0 315.0 225.0 135.0 CPF Sample: 1	D_Cubicy 5.091 2.666 2.665 D_Cubicy 2.353 2.067 2.353 2.067 2.067 0.Cubicy	-
Orientations in Basic Reg	0 1-1>		29.586			65.9 35.3 65.9 65.9	26.6 315.0 243.4 116.6	1.200 1.389 1.384 1.484	
(HKL)[UVW]	P _1	Φ	P 2	PF (sum)		65.9 35.3	153.4 135.0	1.377 1.389	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.0 0.0 270.0 180.0 90.0 360.0 360.0 270.0 90.0	90.0 0.0 90.0 90.0 90.0 90.0 90.0 90.0	90.0 0.0 0.0 0.0 0.0 0.0 0.0 90.0 90.0	54.059 54.059	ŀ	65.9 35.3 65.9 65.9 35.3 IKL=113 25.2 72.5 72.5	206.6 45.0 296.6 63.4 333.4 225.0 CPF Sample: 1 45.0 288.4 198.4	1.200 1.714 1.484 1.384 1.377 1.714 0_Cubicv 1.412 1.728 1.380	_
			OK	Cance					

Sort for ODF:

ODF Values for Orientations from Database (Sort by ODF Values)								
Project : Demo Sample : O_Cubic Orientation Tune	Symmetry : O-Cubic Job : 1 							
No Orientation Type Name ODF (average)	(HKL)[UVW] P P ODF							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \left[\begin{array}{cccccccccccccccccccccccccccccccccccc$							
OK	Cancel							

1.5.6. Show of Next Orientation from Database (Analysis menu)

Changes cursor position of current orientation to the:

- next orientation type from database (for pole figures objects);

- next symmetrically equivalent orientation calculated by LaboTex or next orientation type from database if all symmetrically equivalent orientations were showed (for ODF objects).

Shortcuts:

Status Bar: Keys: ALT+N

1.5.7. Show of Previous Orientation from Database (Analysis menu)

Changes cursor position of current orientation to the previous orientation from database.

Shortcuts:

Status Bar: Keys: ALT+P

1.5.8. Automatic Show of Orientations from Database (Analysis menu)

Automatic display of cursor position of orientations from database (one after one).

Shortcuts:

Status Bar: Keys: ALT+A



Prev

1.5.9. Near (HKL)[UVW] orientations (Analysis menu or right mouse button)

Displays list which contains near (HKL)[UVW] orientations to orientation for current cursor position. This option can be chosen by mouse too. For activate select "Orientation analysis" next click right mouse button in selected point on the pole figure or ODF projection.. "Near orientations" can be sorted by PF or ODF values, Miller indices, distance in Euler space and misorientations.

٢	Near (HKL)[UVW] Orientations											
	ODF	(HKL)[UVW]	<i>የ</i> ው <u>የ</u>		Misorientat	ion						
	1.617 1.617 1.569 1.537 1.537 1.537 1.510 1.463 1.463 1.463	$ \begin{array}{c} (1 \ 1 \ 0)[\ 2 \ \cdot 2 \ \cdot 1] \\ (1 \ 1 \ 0)[\ 2 \ \cdot 2 \ 1] \\ (5 \ 1 \ 0)[\ 1 \ \cdot 5 \ 1] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 2 \ 1] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 2 \ 1] \\ (2 \ 1 \ 0)[\ 1 \ \cdot 2 \ 0] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 2 \ \cdot 1] \\ (5 \ 1 \ 0)[\ 1 \ \cdot 5 \ 0] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 3 \ 1] \\ (5 \ 1 \ 0)[\ 1 \ \cdot 5 \ 0] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 3 \ 1] \\ (3 \ 1 \ 0)[\ 1 \ \cdot 3 \ 0] \\ (1 \ 0 \ 0)[\ 0 \ \cdot 3 \ \cdot 1] \ (1 \ 0 \ 0)[\ 0 \ \cdot 3 \ \cdot 1] \ (1 \ 0 \ 0)[\ 0 \ \cdot 3 \ \cdot 1] \ (1 \ 0 \ \cdot 1)] \ (1 \ 0 \ \cdot 1) \ (1 \ 0 \ \cdot 1) \ (1 \ \cdot 1) \ ($	*5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0 *5.0 90.0	*69.5 *69.5 *72.6 *68.4 *68.4 *68.4 *74.3 *76.6 *76.6 *76.6 *76.6	9.85 9.85 6.88 10.86 10.86 10.86 5.31 3.49 18.53 3.49							
	Max. Value of Miller Indice = 15											

1.5.10. Quantitative Analysis – Integration Method (Analysis menu)

For details and examples see to manual: "Determination of Volume Fraction of Texture Component using LaboTex – Integral Method" (download from <u>http://www.labosoft.com.pl</u> or find this manual in LaboSoft folder)

Opens the window for Quantitative Analysis. It makes it possible to calculate volume fractions of chosen set of texture components. In order to complete the quantitative texture analysis, the following steps are recommended:

- 1) display one of ODF projections,
- 2) identify the texture components (showing orientations from database and/or identifying orientations components by manual movement of the cursor),
- 3) select Quantitative Analysis from Analysis menu or press % icon
- 4) select texture components (orientations) for integration of volume fractions
- 5) select the integration width (change slider position) of each Euler angle for selected components
- 6) press calculation of volume fraction of texture components button



You can also set up value of background (default value of background is minimal value of ODF).



Note: Quantitative Analysis is possible in Single Window Mode only.

Shortcuts: Toolbar: % Keys: ALT+Q

1.5.11. Quantitative Analysis – Model Functions Method (Analysis menu)

For details and examples see to manual : "Determination of Volume Fraction of Texture Component using LaboTex – Model Functions Method" (download from <u>http://www.labosoft.com.pl</u> or find this manuals in LaboSoft folder).

Model function method is very helpful for analysis of texture with overlapping components.

Cijetal Sj O	(Cubic)	Sample	Symm Wal	velgi	_	- Gi	d Cells for	5.0-5.0)	∑ Step ∑ Diagram R	0.50 ange +/- 45.0
LET:	Centre of Di	ientation		4.6%		Cerilite	of Driental	01	4.67	Centre of Di	
No	Texture Compon	ent	On	-45 Distribut	5.0 tion	EVEM PS	гинф	45. FVIMB	0 - Volume	45.0 Show	45.0 Sen. Ea
1	1.1> lber	-		Gauss	Ŧ	Rber	1.3	3.1	58 -	% (1.51) Re	
2 (1	5 1> lber	7] F	Gauss	Ξ	fber	25	21	3 -	* - Calculation Mo	
3 3	i 7 1>lber	7	2	Gauss	Υ.	fiber	4.2	4.5	5 ÷	The Automat	in C flore
4	4 5> 8ber	7]₽	Gaunt	Ŧ	fber	3.9	14.8	4 🚊	2	e one
5 K 1	0 0 > Noer	7] =	Gauss	Ŧ	1ber	10.0	10.0	1	2 Max. Relation N	lunber: 1000 🚅
B C 1	1 D> Reer	7] =	Gautt	Ψ.	fiber	10.0	10.0		2 Max. Fit Error 2	(*1000): 100 🚖
7 C C	1 1 1> fber	÷]	Gautt	Ψ.	fiber	10.0	10.0	- <u>-</u>	*	E52
8		7]	Gaun	Ψ.	180.0	10.0	10.0	-	3; Herano	n:] ••••
1		Ŧ] =	Gautt	Ψ.	0.0	10.0	10.0		% Fit Error% (*100	0): 41124.
10		Y]	Gauss	¥.	0.0	10.0	10.0	-	% Fit Cal	Iculation Progress
Dientel	ion Set. Jan			Ŧ	54	we Dunevit (Ref. Ba	ckground	24	*	

Using this method you can determine volume fraction of texture components assumed that these components have Gauss or/and Lorentz distributions.

After calculation you can simple compare experimental ODF with calculated: Example

Compare experimental (from left) and calculated (from right) ODFs



Note: Quantitative Analysis is possible in Single Window Mode only.

1.6. 'Modelling' menu commands

Model ODF	Modelling of ODF (Creates of ODF on the base model functions)
• ODF Transformations	LaboTex calculates new ODF which is result transformation of initial ODF
ODFs logical operations	Creates new ODF on the base logical operations between two ODFs

1.6.1. Model ODF (Modelling menu)

You can very easy create of a model ODF. You can choose for output ODF :

- Crystal Symmetry;
- Sample Symmetry:
- Grid cells

and next you can choose one or more components (up to 10 components). For each texture component you can choose:

- volume fraction;
- FWHM for each Euler angle (phi1, phi2 and phi);
- o distribution (Gauss or Lorentz).

Model ODF	Nodel ODF												
Crystal Sy	(Cubic)	6ymme rthorho	etry			rid Cells for (Dutput ODF	D	·	Step Diagram Ra	nge +/-	0.50	
100.0%	Centre of Orientation	10	0.0%		Centre	of Orientati	on	100.0	*	Centre of Ori	entation	<	
	<mark>Fwнм 4</mark> = fiber		0.5	0	<mark>Е₩НМ</mark> Ф	P = 10.0	45.	.0	0.50	F¥HM 🖗 =	10.0	45.0)
No 1 { 0 2 { 1	Texture Component 0 1 > 1 0 0 > cube 1 2 > 1 1 -1 > copper	0n 1	Distribut Gauss Gauss	ion	гүнм (% 14.50 10.0	гүнмФ 7.50 10.0	FWHM % 10.0 10.0	Volume Fractio 10	n n 11 %	Sample Name		•	
3 { 1 4 < 2	1 0 }< 0 0 1 > goss ▼ 3 3 > fiber ▼	<u> </u>	Gauss Gauss	• •	5.00 fiber	2.50 10.0	2.50	10		Project Name Demo		•	
5 { 1 6 < 0	2 3} 4 1-2>R		Gauss Gauss	▼ ▼	24.00 fiber	5.00 10.0	10.50 10.0	10	• % • %	Cell Parameters	(Relative)-		
7 < 1 8 < 1	5 4> fiber ▼ 3 3> fiber ▼		Gauss Gauss	▼	fiber fiber	10.0 10.0	10.0 10.0	10	4 % 4	a 1.0 b	1.0	c 🗌	1.0
9 < 5 10 < 1	7 1 > fiber		Gauss Gauss	▼ ▼	fiber fiber	10.0 10.0	10.0	10	4 4 4 4 4	∝ 90. β	90.	γ 🗖	30.
Max. Linearity						Bé	ackground	50	%				
					Cr	eation of M	odel ODF			Exit]		

Next (from a model ODF) you can create any model pole figures or/and any model inverse pole figures using appropriate dialog for create of APF (additional pole figures) or for IPF (inverse pole figures).

1.6.2. ODF Transformation (Modelling Menu)

LaboTex calculates new ODF which is result transformation of initial ODF. New ODF is created in new job for sample of initial ODF. There are two kinds transformations:

ODF Transformation (Rotation)	×					
Project	Sample					
Demo	250-bernd					
Crystal Symmetry	Sample Symmetry					
O (Cubic)	Orthorhombic					
Sample Frame Rotation	C Crystallites/Planes Rotations					
	Build Rotations Model					
Euler Angles						
P1 P2	Choose Rotation Model					
(-360 - 360) (-180 - 180) (-360 - 360)						
O Draft O Medium	Quality C High Quality					
🗖 Reversed Spin 🔽 Triclinic :	s.s. (Output ODF)					
START Cancel						
Transformation Progress						
	0.00 %					

• **frame rotations** - user can rotate sample frame. This option is very important if user would like to see ODF for other (different) sample position (for example if you want see ODF for the perpendicular surface with relation to surface which was measured you should transform initial ODF about Phi=90deg). User can create change sample symmetry for new ODF.





Initial ODF (ODF with Cubic orientation) - after transformation of frame (45 degrees, Phi axis) gives ODF with Goss Orientation :



- **builder of model rotations.** (crystalites/planes rotations). In first step you build rotation model and save it. In rotation model you can choose up to 10 orientations for which you set:
 - ranges of Euler angle around center of orientation (and for symmetrically equivalent positions);
 - vector "hkl" around which will be rotate crystalites/planes (only these which are included in ranges chosen by user);
 - rotation angle;
 - recent of rotated crystalites/planes (from 0 to 100%).



In second step you choose rotation model and make ODF transformation:

ODF Transformation (Rotation)	×
Project Demo	Sample 250-bernd
Crystal Symmetry <mark>O</mark> (Cubic)	Sample Symmetry Triclinic
Sample Frame Rotation	Crystallites/Planes Rotations
Euler Angles P1 P2 (-360 - 360) (-180 - 180) (-360 - 360)	Choose Rotation Model
Options O Draft © Medium (Reversed Spin I Triclinic s	Quality C High Quality a.s. (Output ODF)
Transformation Progress	Cancel 0.00 %

1.6.3. ODFs logical operations (Modelling menu)

ODFs - logical operations. For activate this option user should switch LaboTex to 'Compare Mode' and next choose two ODFs for comparison: one in left window and second in right window (LaboTex Compare Mode). On the base these two ODFs (A - from left window and B from right window) LaboTex creates new ODF which is:

- **intersection** of ODF A and ODF B,
- **diference** of ODF A and ODF B (or B-A),
- **union** of ODF A and ODF B,
- **sum** of ODF A and ODF B,
- **ODF difference** : A or B intersection A and B,
- **inverted ODF** (only for A).

New ODF is created in new Job for sample of ODF A. You can copy and paste these diagrams to other applications or you can made images in 'BMP' ot 'TIF' format (menu 'Edit').

ODFs - Logical Operations	×						
ODFA (ODF from Left Window)	ODF B (ODF from Right Window)						
Project	Project						
Demo	Demo						
Sample	Sample						
250-bernd	250i-bis						
Crystal Symmetry	Crystal Symmetry						
O (Cubic)	O (Cubic)						
Sample Symmetry	Sample Symmetry						
Orthorhombic	Orthorhombic						
Make New ODF C on Base of ODFs A and/o	r B						
ODFs Intersection (A and B)							
O ODFs Difference (A-B)							
C ODFs Difference (B - A)							
C ODFs Union (A or B)							
O DDFs Sum (A+B)							
C ODFs Difference (A or B - (A and B))							
C Inverted ODF A	^_ → ^C ●						
🗖 High Quality							
Start	Cancel						
Calculation Progress							
	94.00 %						

1.7. Help menu commands

•	Help Contents	Shows appropriate index of help topics.
•	Help Search	Searches the online help.
•	About	Displays the user and company, serial number and version number of LaboTex.

Help menu offers the following commands, which provide assistance for LaboTex:

2. Object Toolbar

The object toolbar is displayed across the top of the application window, below the Main Toolbar. The toolbar provides quick mouse access to LaboTex object,

CPF HPF RPF APF INV ODF	J1 J2	100 111 211 113
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Object toolbar contains:



φ₂ φ₁ ϕ_{\Box} , ϕ_{2} , $\Box \Phi$ for ODF object type : ٠

To select the object, click object type button first, then job button and next click proper object button. If object type button is grey (as APF in below example), sample contains no APF object!

CPF NPF RPF APF INV ODF J1 J2 100 111 211 113