

LaboTex

Version 3.0

The Texture Analysis Software for Windows

LaboTex: Exercises

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Exercise 1

Subject: *The first steps with LaboTex.*

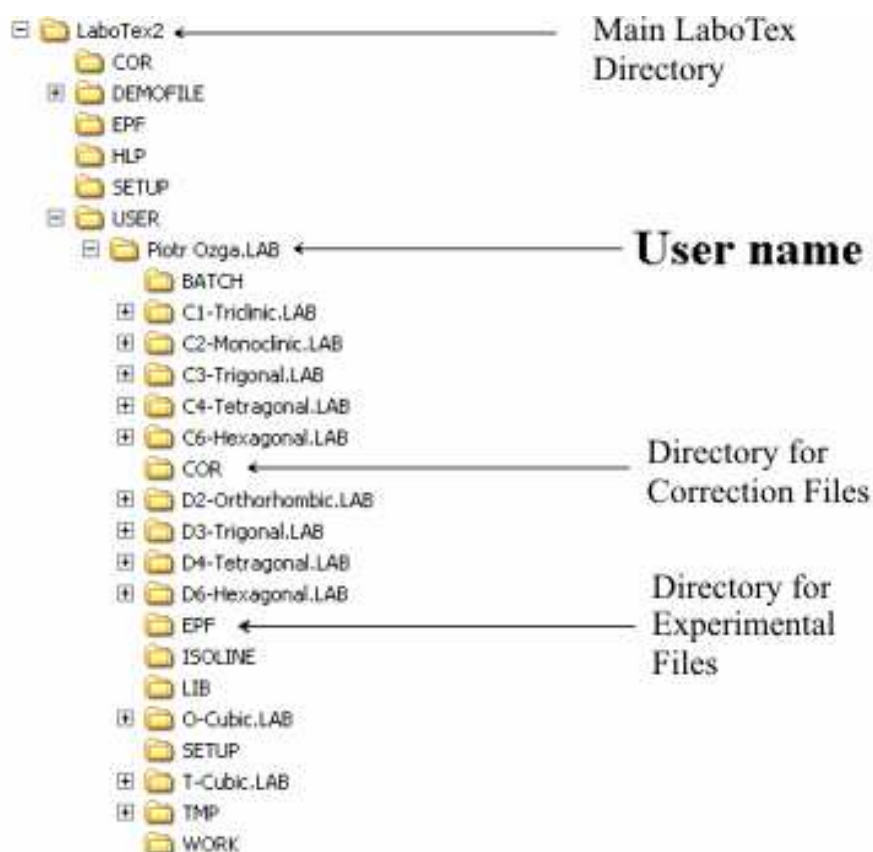
First, we try download the files with exercises from LaboSoft server: <http://labotex.com>

You can find the compressed zip file: **Exercises.zip** in section: '**Download**'.

This zip file contains following files:

- *Exercise2-Cu.ppf*
- *Exercise4-Fe.epf*
- *Exercise4-Fe.pow*
- *Exercise5-Al.epf*
- *Exercise5-Al.pow*

You should place above files in proper directories. The default these directories you can find inside LaboTex main directory (default is C://LaboTex2):



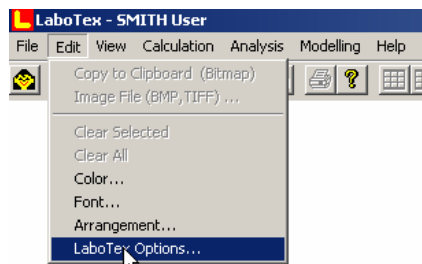
Please copy files: *Exercise2-Cu.ppf*, *Exercise4-Fe.epf*, *Exercise5-Al.epf* to **EPF** directory and files *Exercise4-Fe.pow*, *Exercise5-Al.pow* to **COR** directory.



Warning: When you work with files which contains set of single orientations , you should place them in **EPF** directory, too.

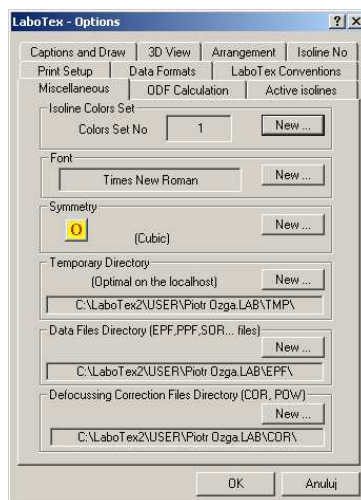
LaboTex: Exercises

You can change the default directories 'EPF' and 'COR' in 'LaboTex option'. Select 'LaboTex Options...' from the *Edit Menu*.

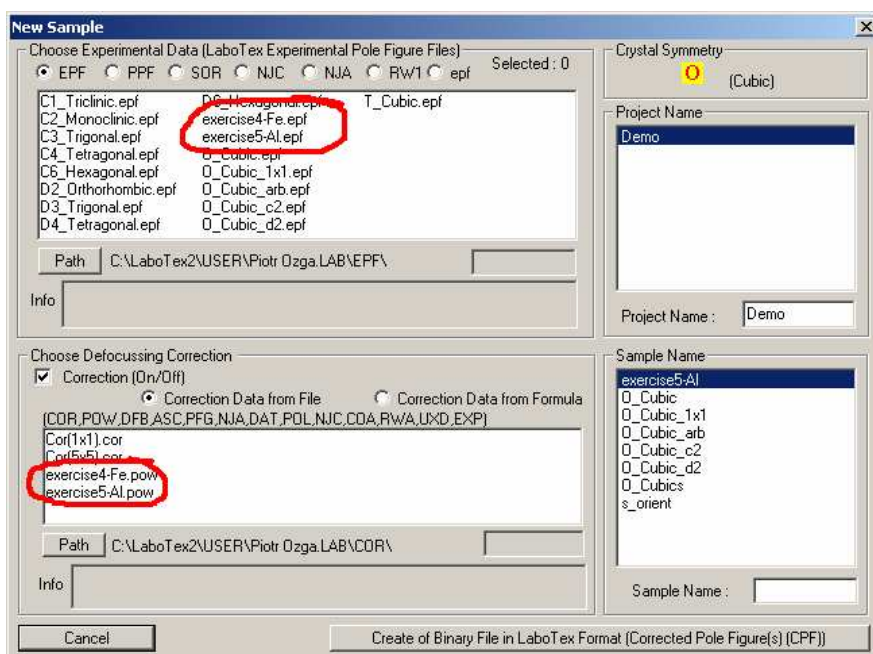


The fields you need to change are in group of options *Miscellaneous*:

- 1) Experimental Data Directory (EPF and other)
- 2) Correction Data Directory (COR)

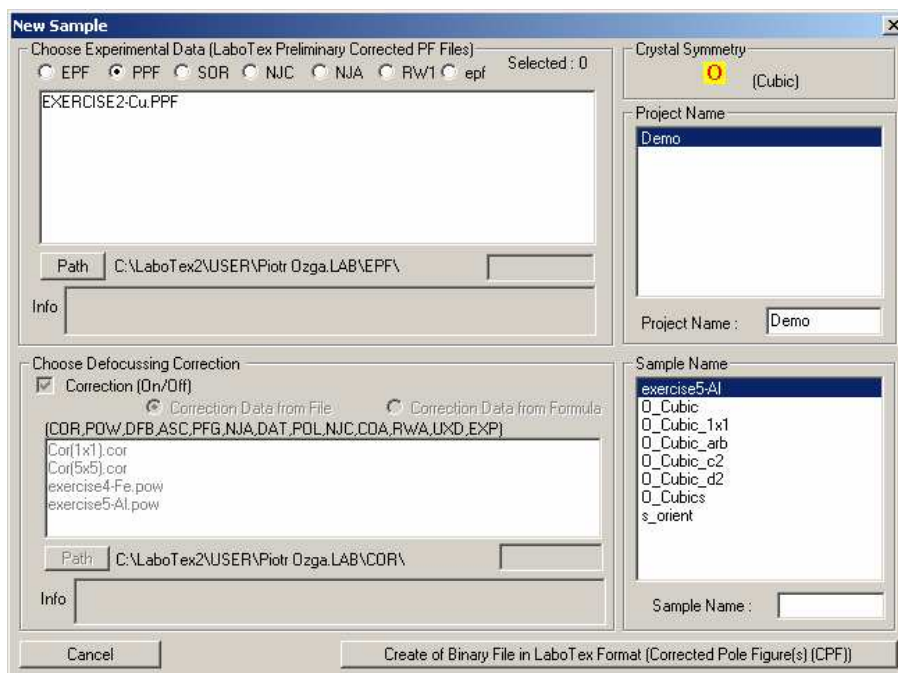


Now, when you choose item 'New Sample' from menu 'File' (or icon 'New Sample' on toolbar) then you can see exercise files in the both lists for experimental pole figure data and for defocussing correction data:

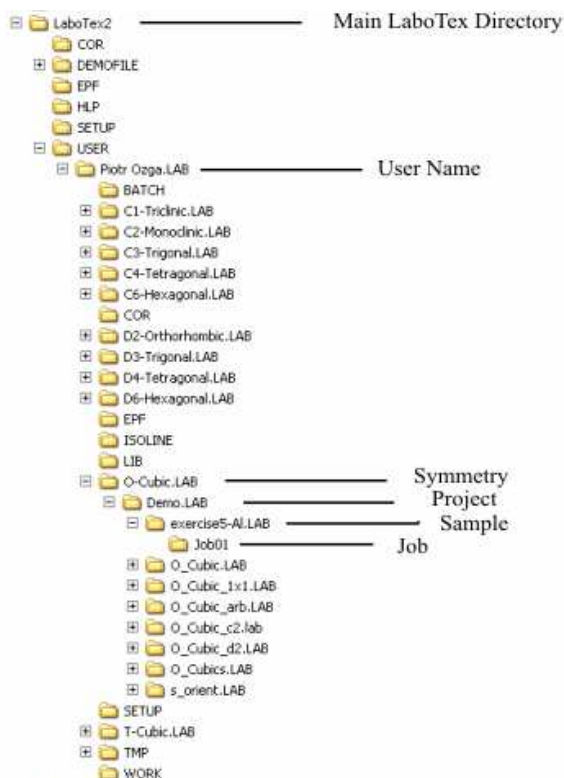


LaboTex: Exercises

When you will change radio button from ‘*EPF*’ to ‘*PPF*’ then you can also find Exercise2-Cu.ppf file:



In LaboTex you can not delete project and sample directly from inside program, hence you should use other, external program, for example Windows Notepad. Before delete project or sample you should exit from LaboTex. Name of directories for user name, crystal symmetry, project and sample have extension ‘*LAB*’.



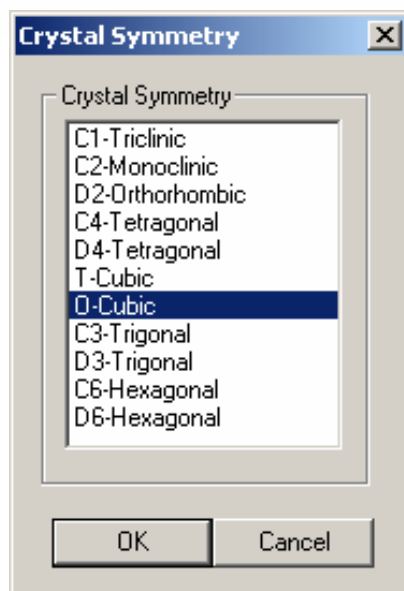
LaboTex: Exercises

Warning: You should not delete directories for crystal symmetry! (*O-Cubic.LAB* etc.). You can delete directories only inside directories for 'crystal symmetry' (for example inside directory *O-Cubic.LAB*) as also file and directories inside directories: *EPF*, *COR*, *LIB* and *TMP*.

When you want find the sample inside the LaboTex then choose first proper crystal symmetry from menu '**File**' or click on the icon on the toolbar as below:

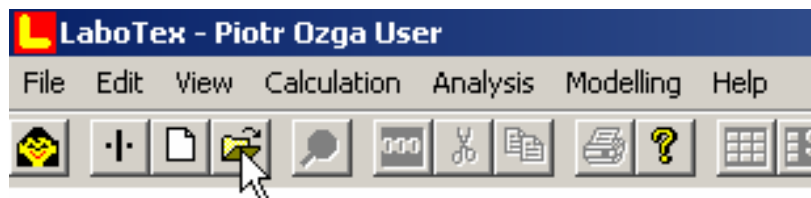


and next select '**O-Cubic**' crystal symmetry:



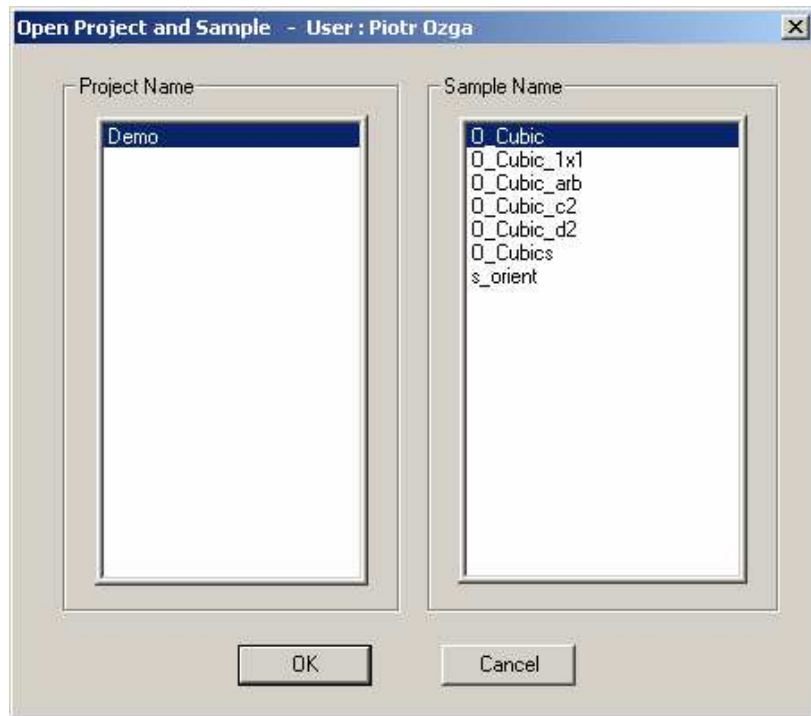
Warning: '**O-Cubic**' crystal symmetry is default symmetry after start of LaboTex. If you work with other crystal symmetry you can change this default in '**LaboTex Options**'.

Next choose item '**Open Sample**' from menu '**File**' or choose icon on the toolbar as below:

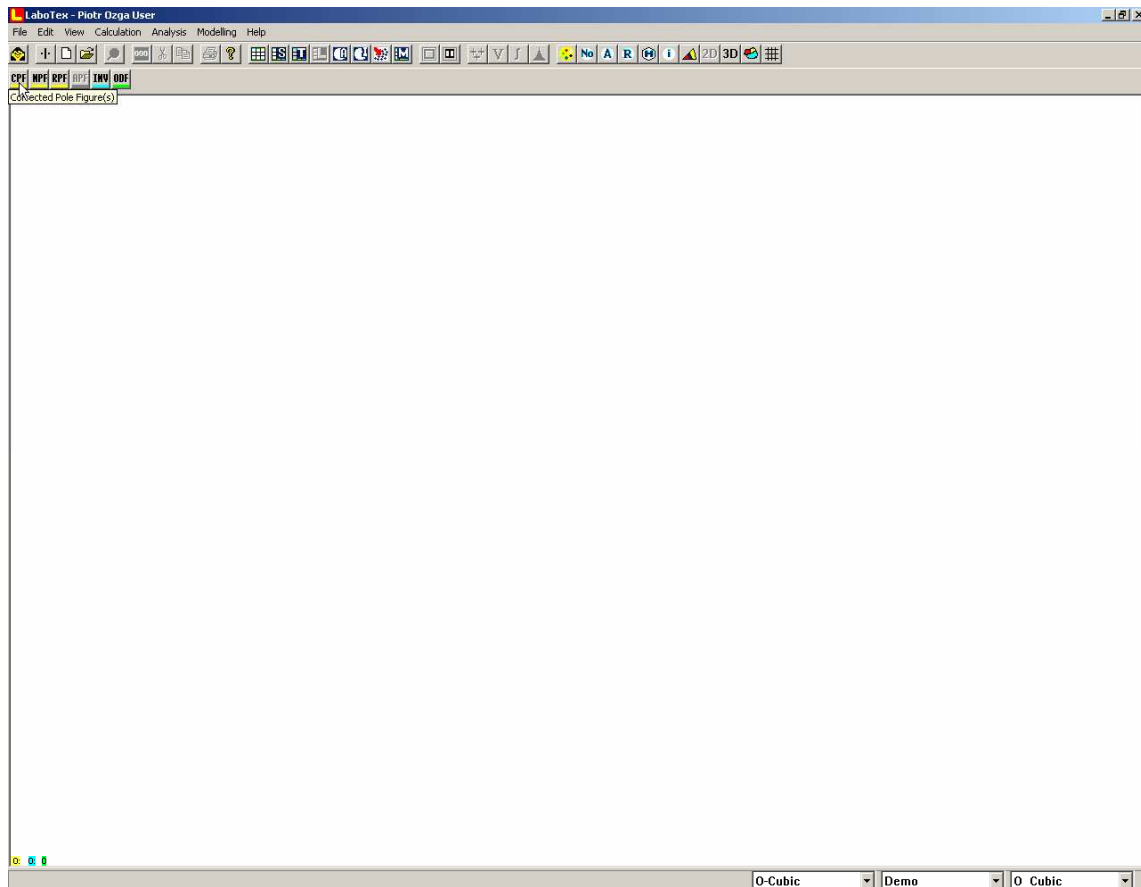


and next select sample '**O-cubic**' and press '**OK**' button:

LaboTex: Exercises

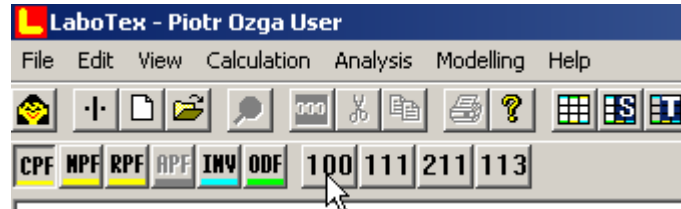


Now, Labotex displays the second toolbar, which lies below main toolbars. Different kinds of pole figures are indicate by buttons in yellow color, button for inverse pole figure is in blue color and button for ODF is in green color. You can observe numbers of objects at bottom of window from left side and you can change symmetry, project or sample using combobox from right side:

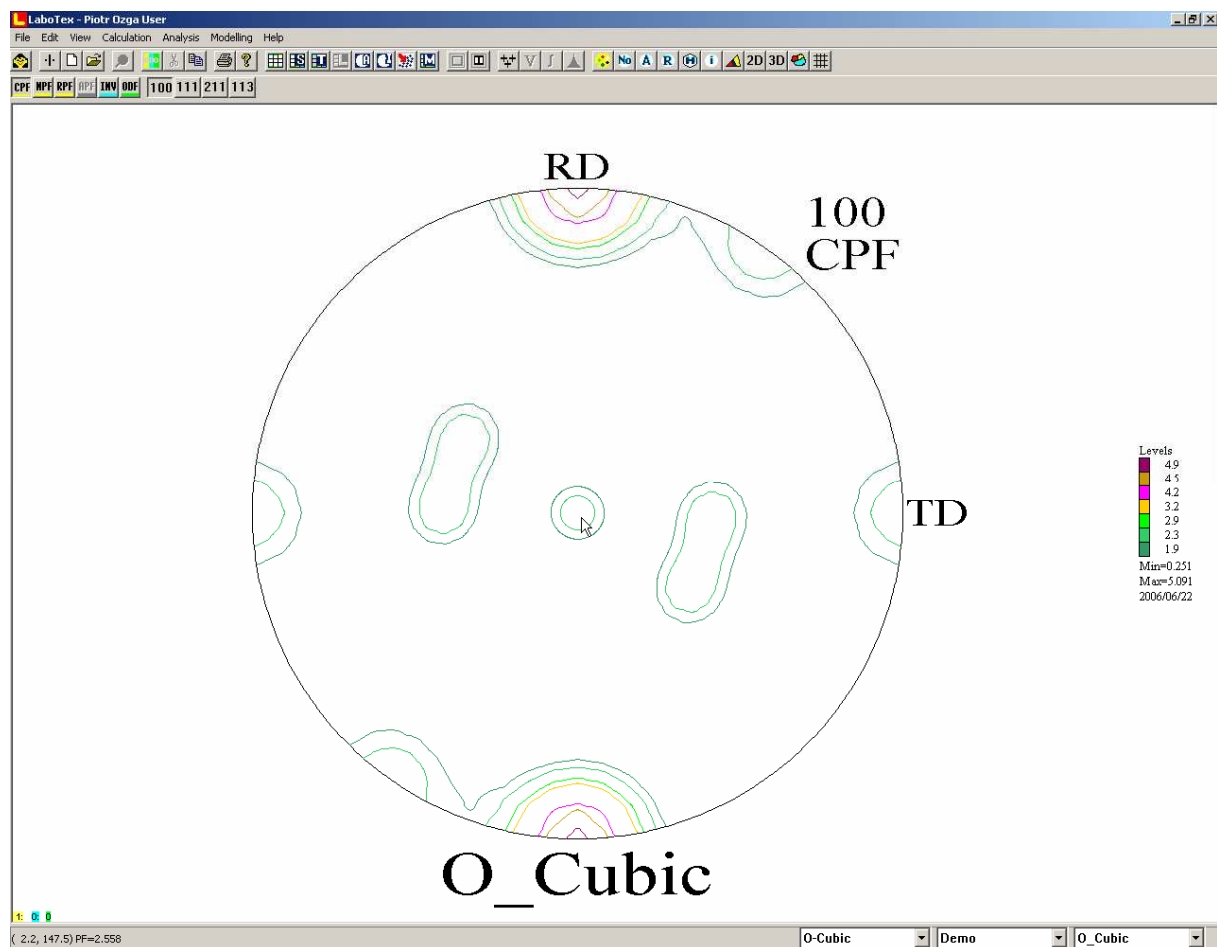


LaboTex: Exercises

Grayed button on the toolbar indicates that LaboTex does not contain objects this kind. In our example LaboTex does not contains *APF* objects. Please click mouse on the *CPF* button. You can see that Labotex displays new buttons from the right side of color buttons. Each new buttons corresponds to other preliminary corrected pole figure (i.e. CPF object).

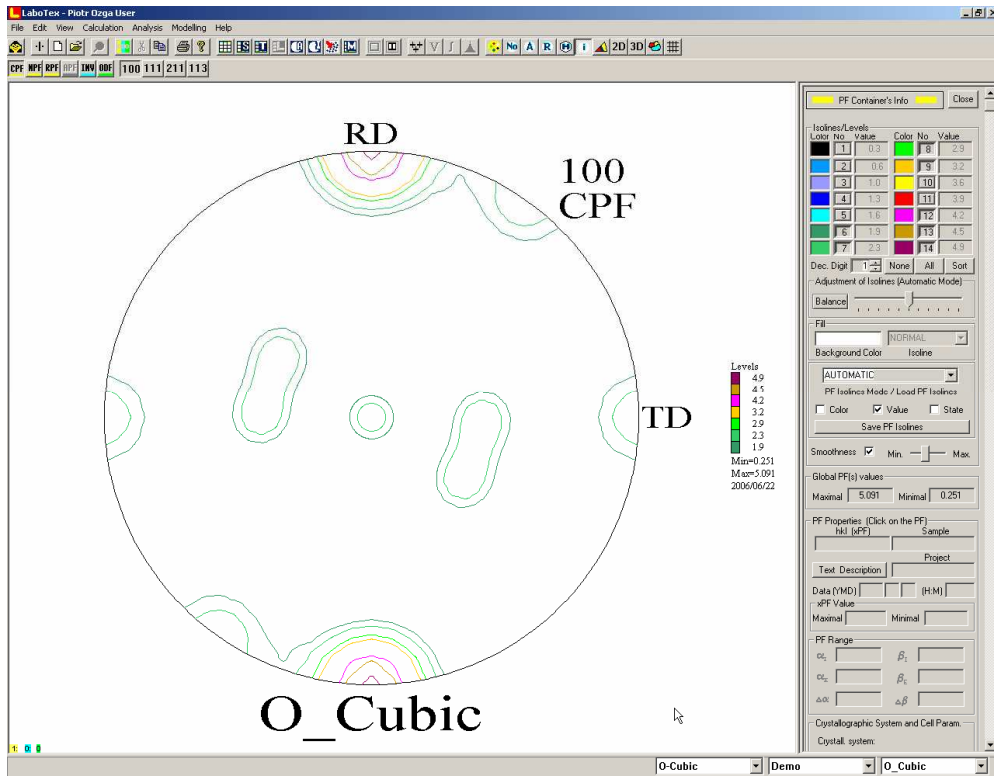


Click on the '100' button:

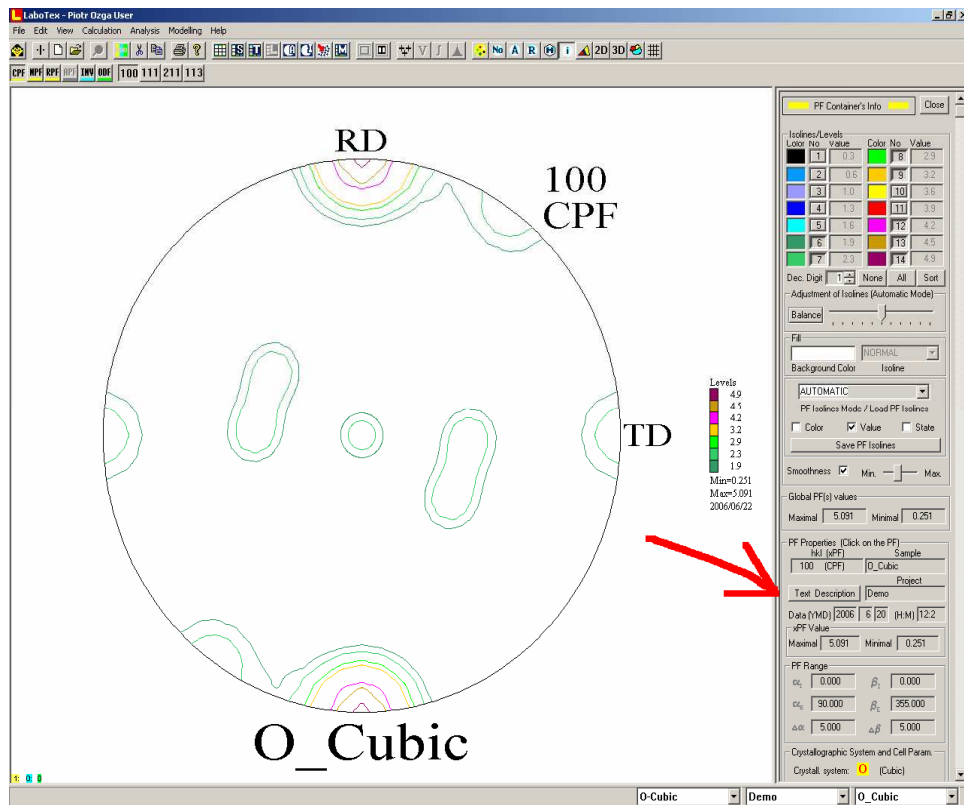


LaboTex displays image of $\{100\}$ pole figure and on the bottom bar you can observe current parameters in cursor position (alpha, beta angles and intensity of pole figure). When you double click on isolines legend from right side of the window then LaboTex displays from right side new dialog window '*PF Container's INFO*', which is very helpful for change of display parameters (you can also click on the icon with letter 'i').

LaboTex: Exercises

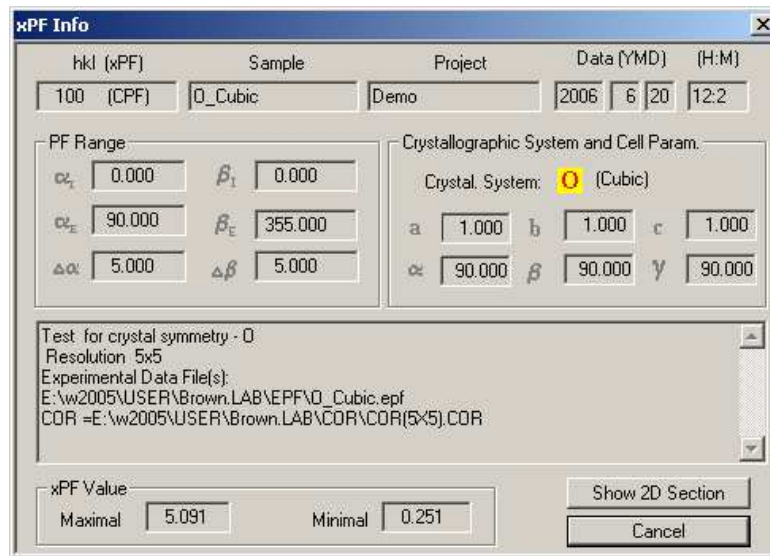


When you click on the pole figure LaboTex fills empty field in '**PF Container's INFO**' data for chosen pole figure (because there is only one pole figure on the screen LaboTex displays data for this pole figure).

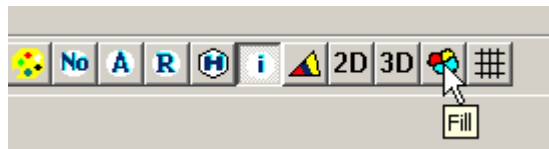


LaboTex: Exercises

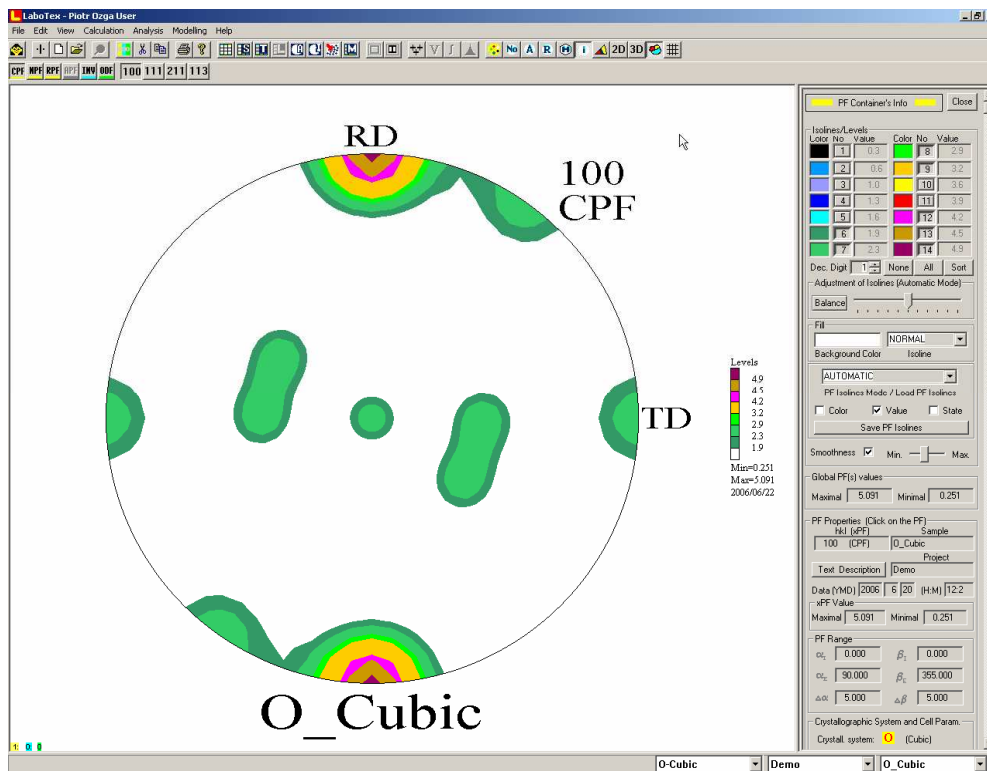
You can also display information about pole figure when you click on the image of the pole figure right mouse button:



Next please click on the '**Fill**' icon

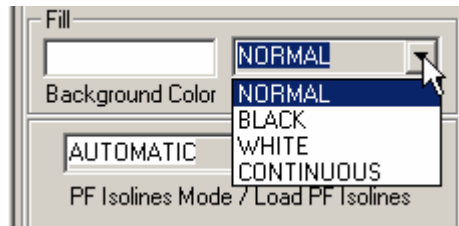


LaboTex fills area between isolines:

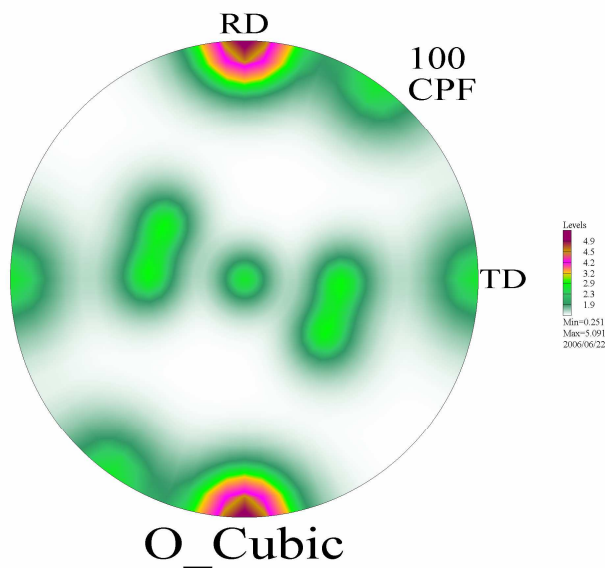


LaboTex: Exercises

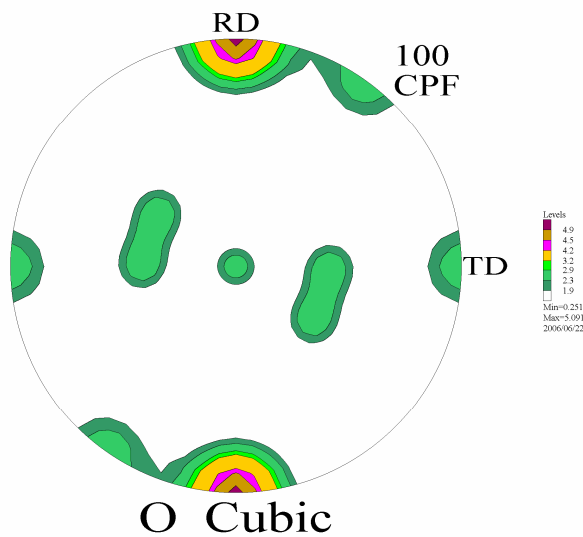
You can change filling options using options from combobox:



Please try to change this option to '**Black**' and to '**Continuous**'. Color of each point of pole figure is interpolated from the pole figure data in the '**Continuous**' mode:

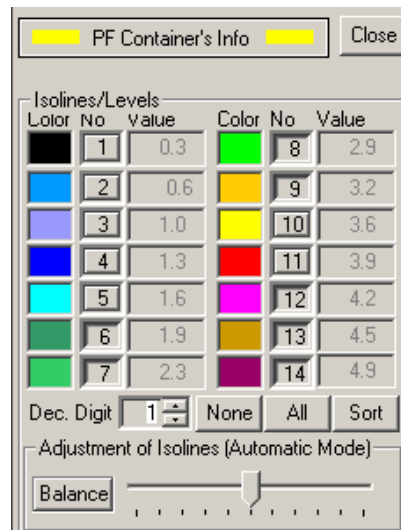


When '**Black**' option is chosen, LaboTex plots all isolines in black color:

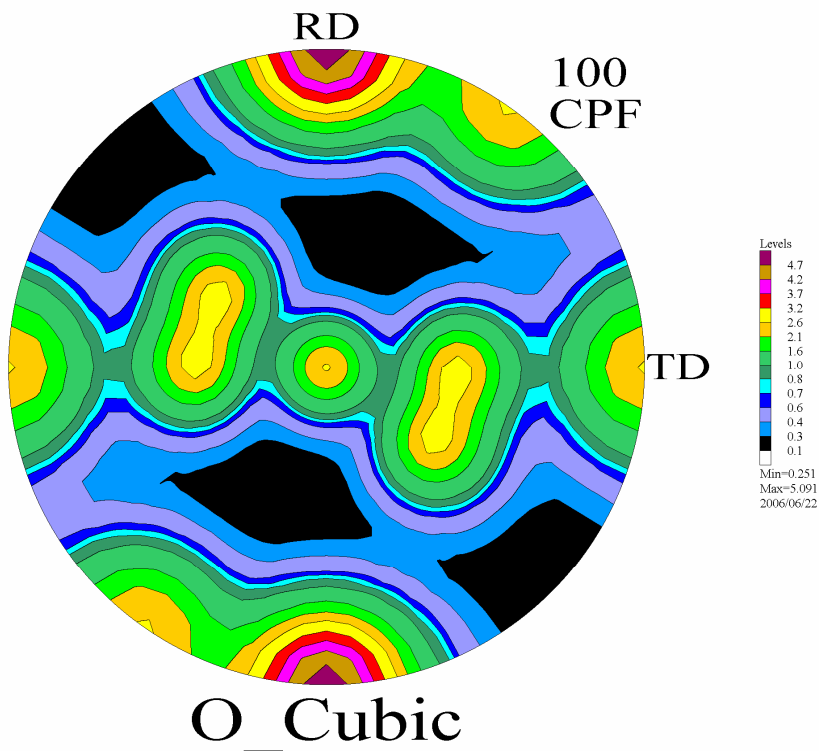


You can change number of isolines by click on appropriate buttons in '**PF Container's INFO**'. You can also find optimal isolines by dynamic changes of slider position.

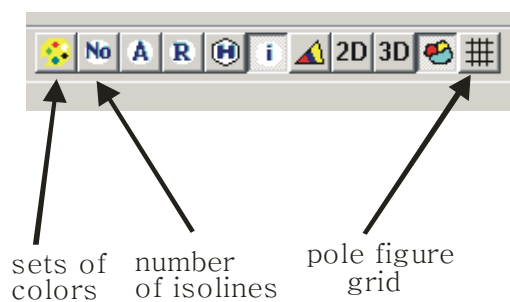
LaboTex: Exercises



Please try find optimal for you displaying setting.

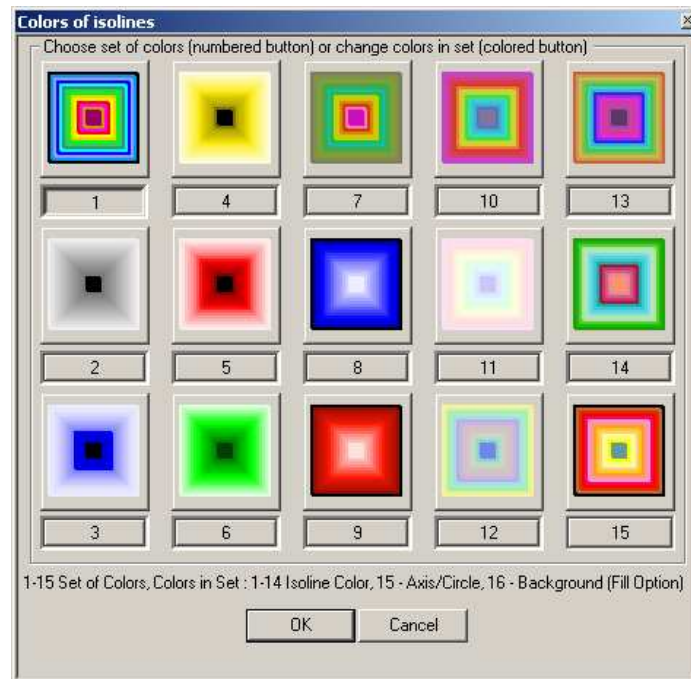


You can change number of isolines, set of colors or turn on plot of grid for pole figure using appropriate icon from toolbar:

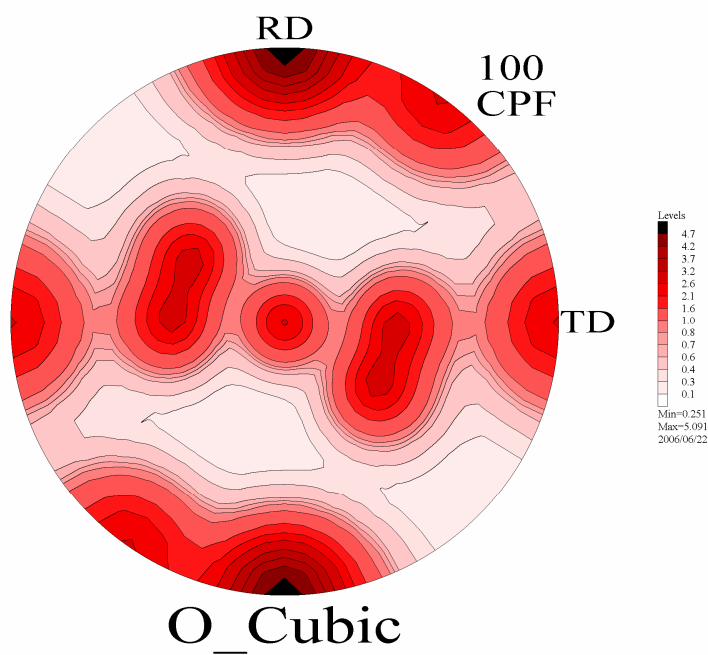


LaboTex: Exercises

Click on the icon for change of set of colors and change to set number 5.

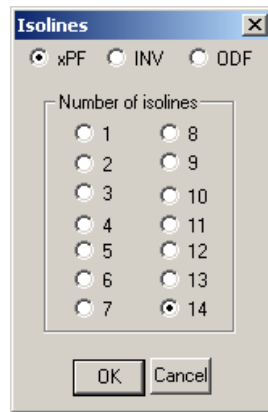


Now Labotex is plotted with a different tint of red.

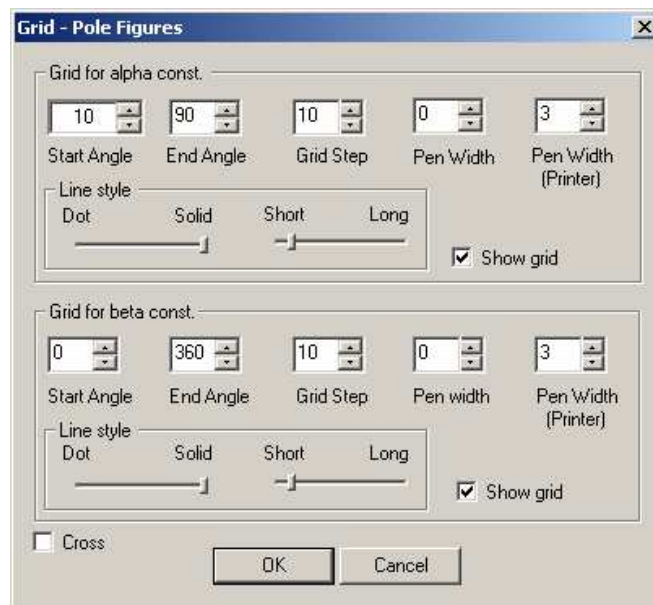


LaboTex: Exercises

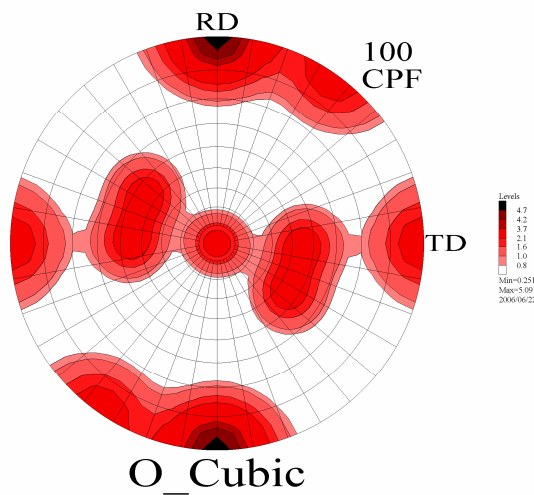
Now, you can try to change number of isolines from 14 to 7 using dialog window:



and turn on plots of grid for pole figure (choose both '*Show grid*' checkbox):

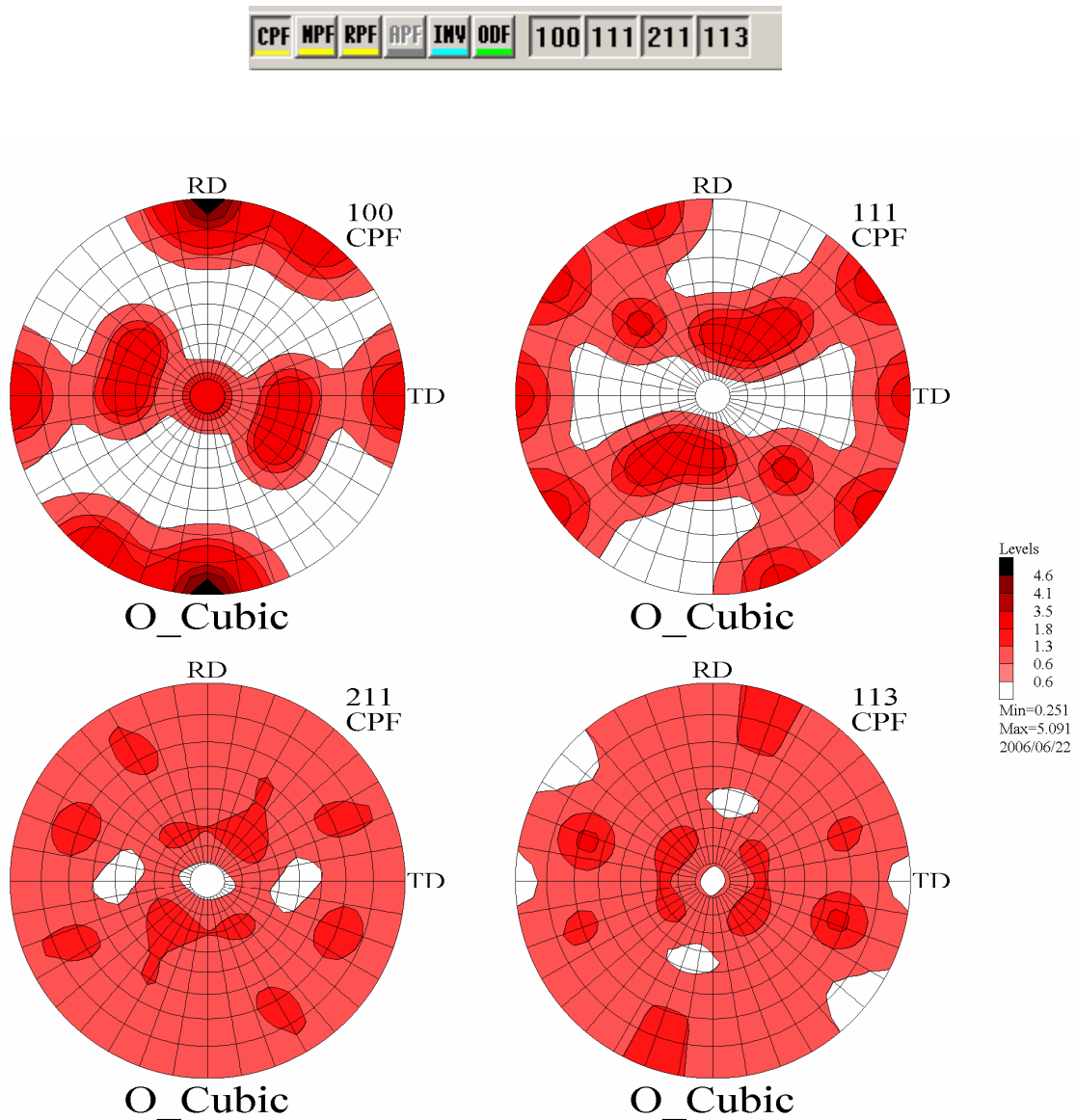


After these changes the pole figure {100} is displayed as below:



LaboTex: Exercises

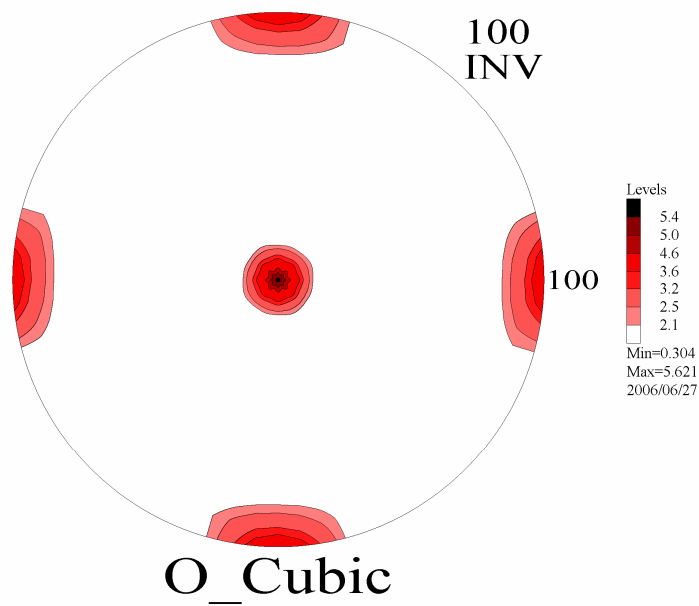
You can display more than one pole figure simultaneously. Press all buttons with miller indices:



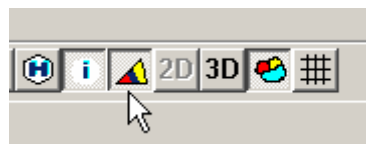
When you click on the '*INV*' button on the toolbar the pole figure disappear and the screen is empty. LaboTex tries to display only inverse pole figures in this mode, but inverse pole figures are not chosen. You can see that Labotex displays new buttons '*100*', '*010*', '*001*' from the right side of color buttons. Each new buttons corresponds to other inverse pole figure (i.e. INV object where '*XYZ*' are parameters of vector – for details see to manual about inverse pole figure). Click button '*100*':



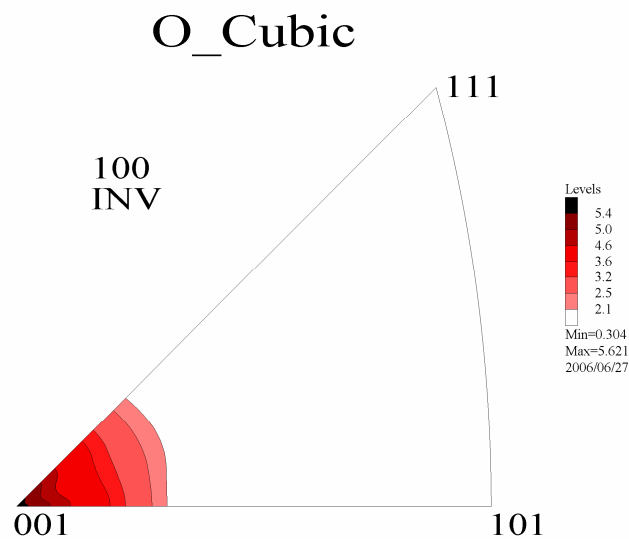
LaboTex: Exercises



When you click on the '*Show Basic Region*' icon



the LaboTex displays fundamental zone. In case of cubic crystal symmetry LaboTex displays the standard stereographic triangle:



LaboTex: Exercises

