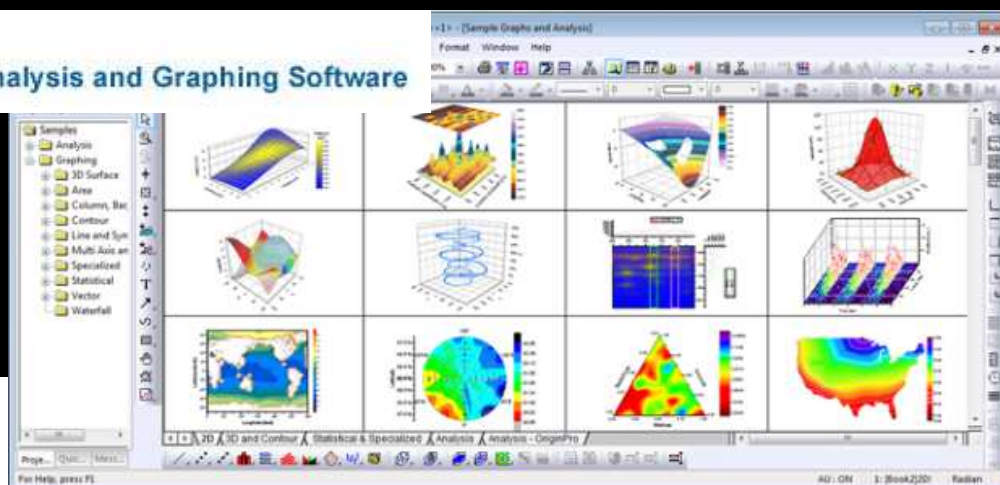
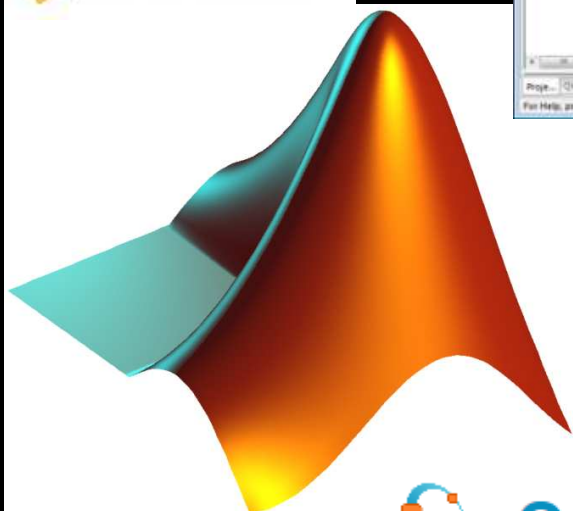


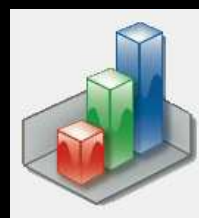
**OriginLab** Data Analysis and Graphing Software

**SIGMAPLOT**  
Exact Graphs and Data Analysis

**MathWorks**



**Octave**



**LabPlot**

**Sci lab**

**SciDAVis**

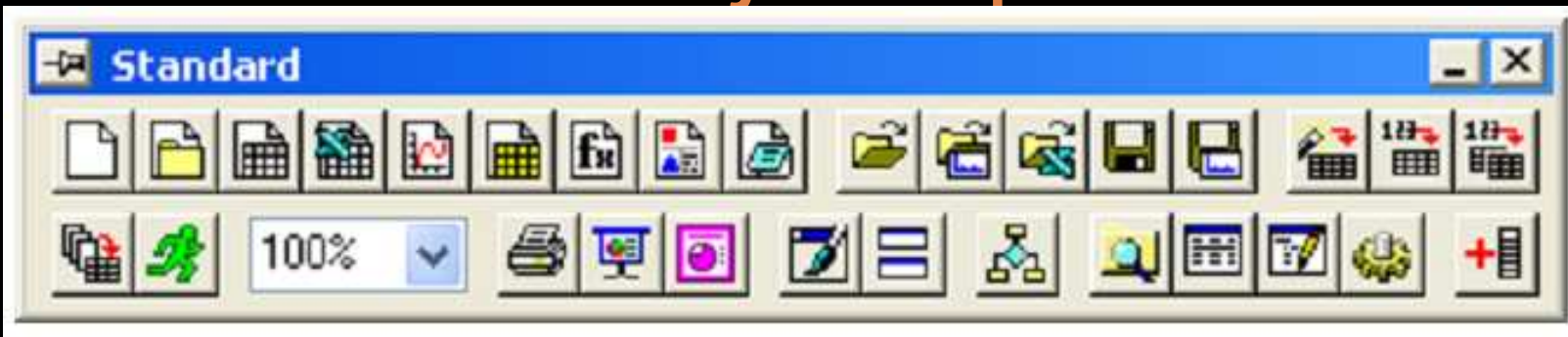
## *Základy programovania pre fyzikov*














Erik Čižmár

Univerzita P.J. Šafárika

v Košiciach















# Dôležité nástroje na paneloch



	New Project		New Folder
	New Workbook		New Excel Workbook
	New Graph		New Matrix
	New Function		New Layout
	New Notes		
	Open Template		
			Import Wizard
	Import Single ASCII		Import Multiple ASCII



















# Dôležité nástroje na paneloch



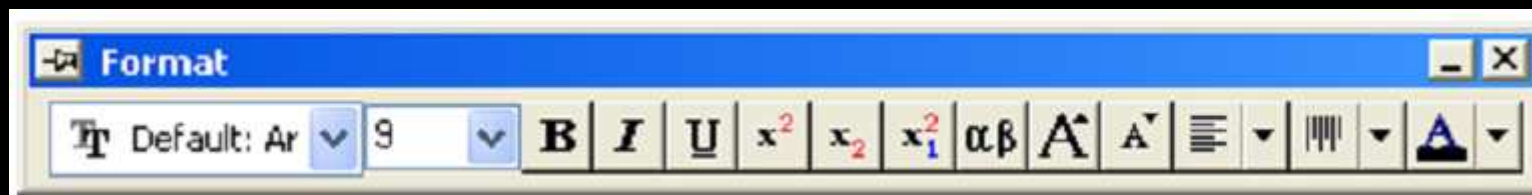
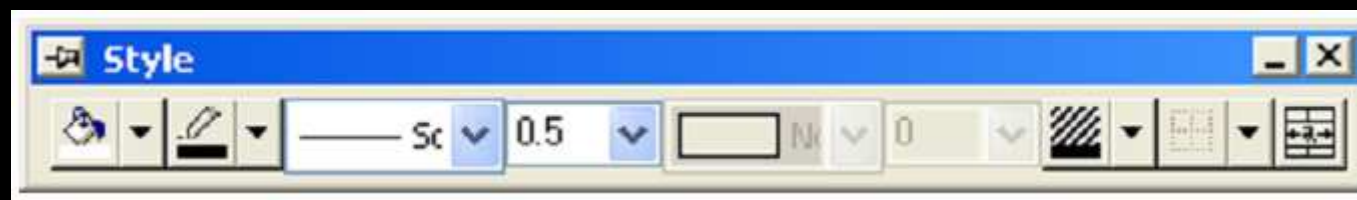
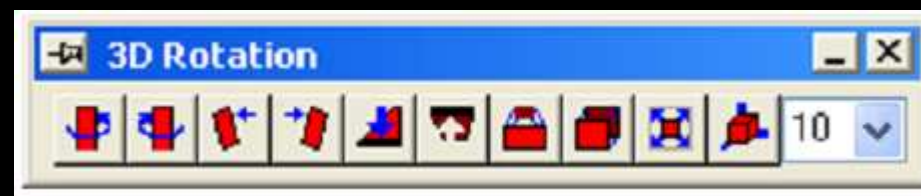
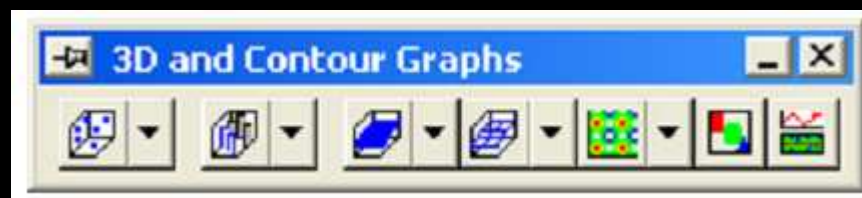
	Zoom In		Zoom Out
	Whole Page		Rescale
	Extract to Layers		Extract to Graphs
	Merge		Add Bottom-X Left-Y Layer
	Add Top-X Layer		Add Right-Y Layer
	Add Top-X Right-Y Layer		Add Inset Graph
	Add Inset Graph With Data		Add Color Scale

# Dôležité nástroje na paneloch

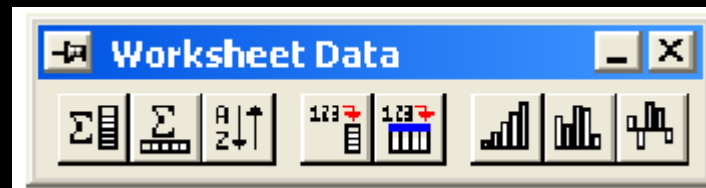










	Zoom In		Zoom Out
	Whole Page		Rescale
	Extract to Layers		Extract to Graphs
	Merge		Add Bottom-X Left-Y Layer
	Add Top-X Layer		Add Right-Y Layer
	Add Top-X Right-Y Layer		Add Inset Graph
	Add Inset Graph With Data		Add Color Scale
	New Legend		Add XY Scale
	Date & Time		New Link Table

# Dôležité nástroje na paneloch






# Dôležité nástroje na paneloch



	Statistics on Column(s)		One column
	Sort		Row number
	Statistics on Row(s)		Normal random numbers
			All columns
			Uniform random numbers








# Dôležité nástroje na paneloch



	Set as X		Set as Y
	Set as Z		Set as Y Error Bars
	Set as Labels		Set as Disregard
	Set as Grouping		Set as Subject
	Move to First		Move Left
	Move Right		Move to Last

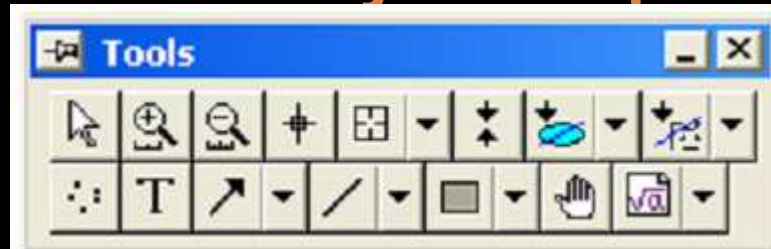
# Dôležité nástroje na paneloch





















	Set as X		Set as Y
	Set as Z		Set as Y Error Bars
	Set as Labels		Set as Disregard
	Set as Grouping		Set as Subject
	Move to First		Move Left
	Move Right		Move to Last









# Dôležité nástroje na paneloch



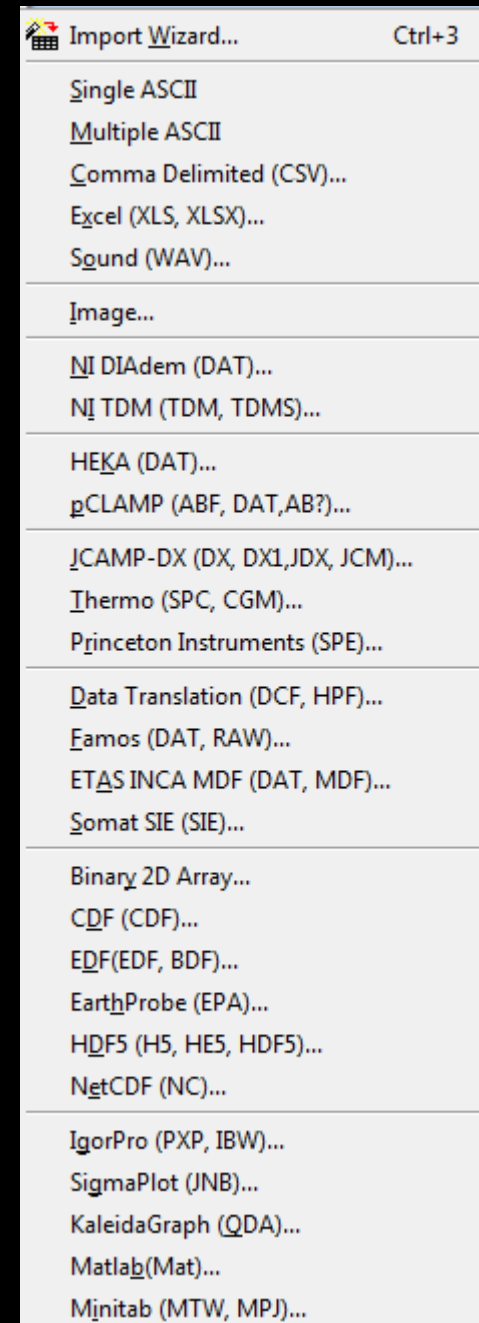
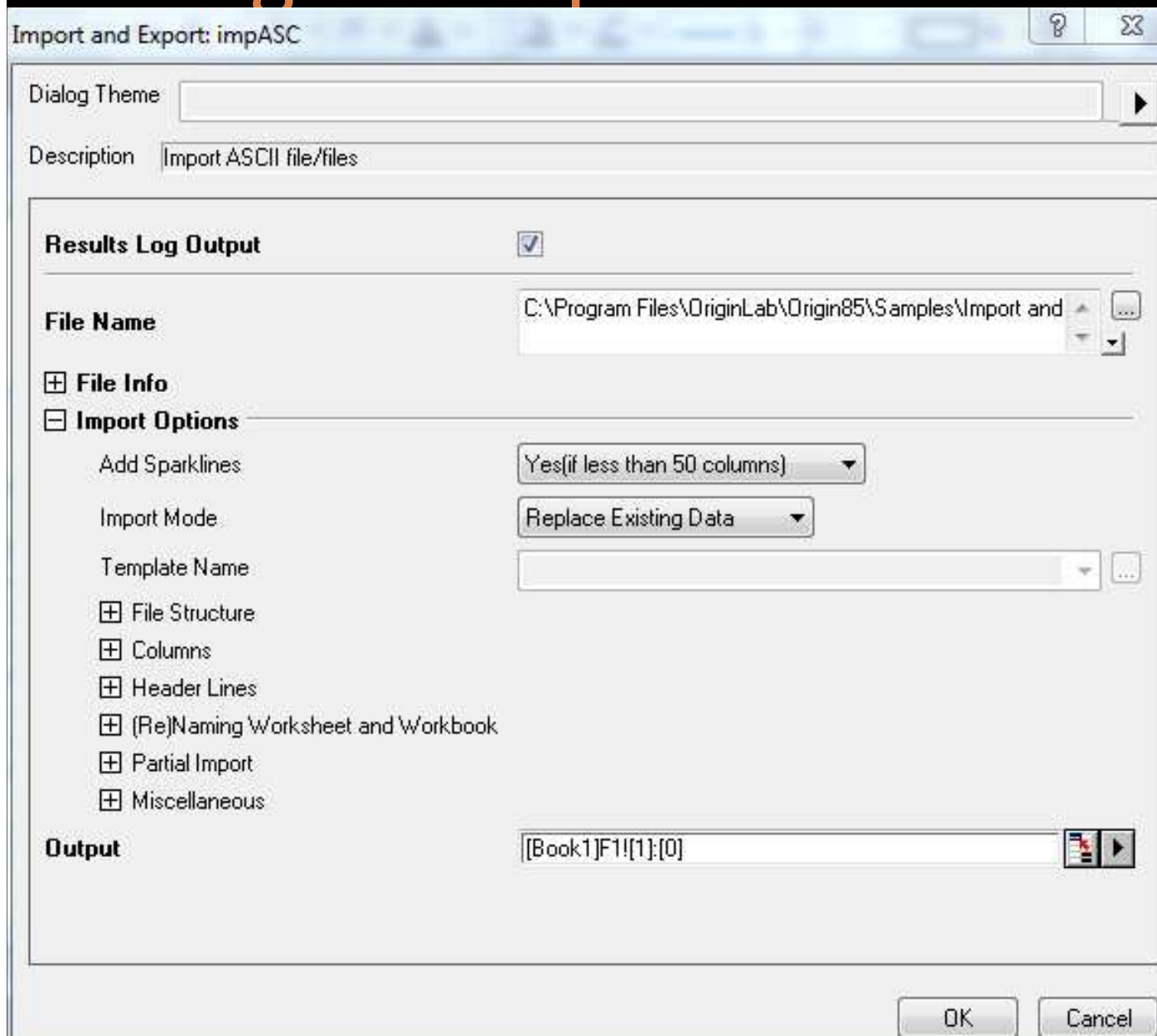
	Pointer		Scale In
	Scale Out		Screen Reader
	Reader		Annotation
	Cursor		Data Selector
	Selection on Active Plot		Selection on All Plots
	Mask Points on Active Plot		Mask Points on All Plots
	Unmask Points on Active Plot		Unmask Points on All Plots
	Draw Data		Text Tool
	Arrow Tool		Curved Arrow Tool

# Dôležité nástroje na paneloch



	Mask Range
	Change mask color
	Swap mask
	Unmask Range
	Hide/Show masked points
	Disable/Enables masking

# Origin – Import dát



# Origin – Import dát

## □ Import Wizard

Import Wizard settings can be saved to a filter file for re-use. Filter files can be selected on the first page of this wizard.

Once saved, import filters can also be used to automatically determine import settings when dragging and dropping data files into Origin and when opening data files with the File:Open menu item.

Save filter

In the data file folder C:\C\Wc32\Samples\Curve Fitting\  
 In the User Files folder C:\C\Wc32\Larry\Filters\  
 In the Window

Show Filter in File:Open List

Filter Description An example to create filter

Filter file name (.OIF extension will be appended) MyFilter

Specify data file names to which this filter will be associated. You can use wild cards, and can specify multiple names separated by ';'.

\*.dat  
Ex: \*.txt or \*.txt; \*.dat; mydata????.\*

Specify advanced filter options

Cancel << Back Next >> Finish

# Origin – manipulácia dát

- █ **Extract Worksheet data – Workseet Query** – umožňuje vybrať dáta, ktoré spĺňajú podmienky užívateľa

**Extract Worksheet Data - [USMetropolita]"US Metropolitan Area Population"**

File Scripts F(x) ← Menus Show/hide the left panel

Columns:

Extract	Name	1st Value	Alias	Column
<input checked="" type="checkbox"/>	Populatio	11965	D	Density
<input type="checkbox"/>	Sq. Mi.	915	M	Metropolitan Area
<input checked="" type="checkbox"/>	Density	130.		
<input checked="" type="checkbox"/>	Metropolil	Abilene,		

Condition: If D>100 AND M[i]\$ == "CA"

Rows Found: 19

Row (i): From 1 To 355 All Rows

Output:

Recalculate None

Add a column of 1=true,0=false  
 Extract to New Worksheet  
 Extract to New Workbook  
 Extract to Specified Sheet  
 Fill with Specified Color

Left Panel Right Panel

Annotations:

- Columns to be extracted
- Select Column Variables for If Test
- Choose columns to build the condition
- The condition used to extract data
- Number of records found
- Test -- select if true
- Records that meet the condition are highlighted and counted
- Recalculate control

**if...**

"" matches any substring; "?" matches any character

Column Variable: h

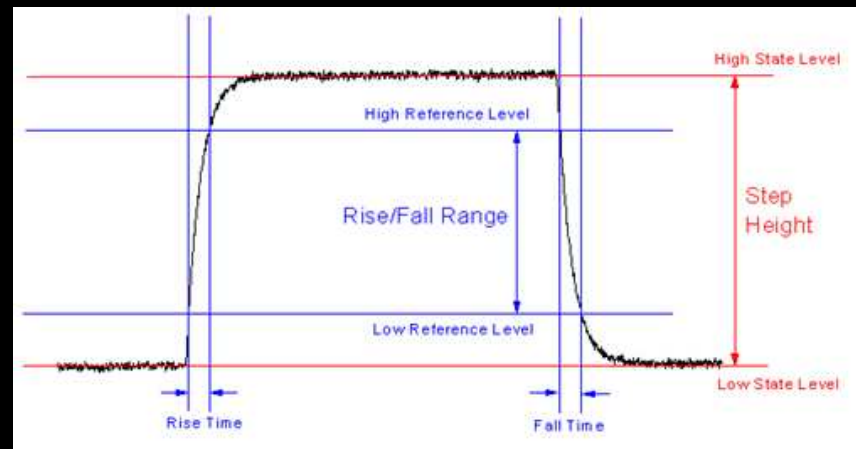
Operator: >=

Value: 160

OK Cancel

# Origin – Gadgets

- **Gadgets** – nástroje pre rýchlu analýzu dát zobrazených na grafe
  - **Quick Fit** – linear, quadratic, cubic, Loretz, Gauss, Boltzman, Logistic, ExpDecay – je možné ho editovať a funkcie pridávať
  - **Rise Time**



- **Statistics** a **Region Statistics** – štatistické údaje sady dát
- **Differentiate** – numerická derivácia vrátane vyhladenia dát
- **Integrate** – numerická integrácia – určenie plochy pod krivkou – napr. intenzita absorbných signálov, entropia určená z merného tepla
- **Interpolate** – interpolácia nerovnomerne rozložených dát
- **FFT** (Fast Fourier Transform) - fourierovská transformácia