Origin is on all Physics 403 computers.
What it can do:

1. **Graphical presentation of data**
2. **Data analysis**
3. **Preparation of publication-quality figures**

- Specially designed for **scientific** graphics
- “Standard” Windows application, does not require knowledge of C++ or any other high level computer language
- Can write special functions or procedures using Origin programming tools
Importing data

Can drag and drop .dat or .txt files into empty spreadsheet
Or import files
Graphical presentation of data: Basic Plot
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Graphical presentation of data: Basic Plot

- Top and Right axes, grid lines
- axes titles
- Bold tick labels.
- For a better-looking graph, volts were converted to $\mu$V
Graphical presentation of data: Templates

Open template

Template for “second sound” plots
Graphical presentation of data: Templates

Second sound data

T = 1.58K

SS sample: Graph20
Graphical presentation of data: Fitting, etc.

Second sound data

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Second sound data

T = 1.58K

Data: SecondSoundT_RV
Model: Lorentz
Equation: y = y0 + (2*A/PI)*(w/(4*(x-xc)^2 + w^2))
Weighting:
y  No weighting

\( \chi^2/\text{DoF} = 1.9337E-16 \)
\( R^2 = 0.99151 \)

y0  3.4484E-8  \( \pm 2.746E-10 \)
x0  55.54462  \( \pm 0.00776 \)
w1  2.98817  \( \pm 0.02228 \)
A1  3.6694E-6  \( \pm 1.9666E-8 \)

SS sample: Graph25

f (Hz)
Graphical presentation of data: Fit Linear

\[ Y = 1.57256 + 2.74309 \times 10^{-6} \times X \]
Graphical presentation of data: Fit Polynomial

The graph shows a fit of the form:

\[ Y = 1.5716 + 4.66073 \times 10^{-6} X - 8.21297 \times 10^{-10} X^2 + 8.30442 \times 10^{-14} X^3 + 3.03266 \times 10^{-18} X^4 \]
Graphical presentation of data: 2-layer graph

Second sound data

SS sample: Graph20
Graphical presentation of data: Smoothing

Second sound data

R (μV) vs f (Hz)

T (K)

SS sample: Graph20
Working with data: Worksheets
Layouts

Setup for measurement of s/c properties

Agilent E3649A

SR 830

Agilent 34420A

Ch1

Ch2

$V_1$

$V_2$

$I_1$

$I_2$

AC

DC

$R_{DC}$

$R_1$

$R_{AC}$

SAMPLE

AC in

sine out
Custom tools
Using digitizer script
(PMN)$_{0.87}$(PT)$_{0.13}$, single crystal
Example Origin graphs

Ferroelectric Experiment

$\varepsilon'/10^3$ vs. $T$ (K)

$3 \text{mHz}$

$1 \text{MHz}$

$10^3/\varepsilon'$
Example Origin graphs

Optical pumping

Detector signal (V)

Lock-in output (µV)

f (MHz)

Mapping 0.5-2.5A from March 1st 2012: Graph7
Example Origin graphs

Tunneling Experiment

Sample #

T=1.49K

Al-Al$_2$O$_3$-Pb

$\frac{dl}{dV}$ (mS)

Sample n2 run8 zoom temp 1.55K

Tunneling 1: Graph9

$U_{dc}$ (mV)
Example Origin graphs

Magnet mapping

![Magnet mapping graph](image-url)
Here is another way to run Origin without needing to install it on your own computer (e.g. if you have a Mac, which is not supported by Origin):

1. Connect to VPN

2. Install and run Citrix:  
   http://it.engineering.illinois.edu/ews/lab-information/remote-connections/connecting-citrix

3. Click on "Apps" and then "Origin"

4. To open and save files, use your EWS folder at this address: "smb://ad.uillinois.edu/engr-ews/[Your netID]"
A very short and simple manual covering only the main operations with Origin, and manuals from Origin are on the server (\Phyaplportal\PHYCS403\Common\Origin manuals).

Do not forget about Origin Help

Video Tutorials on the company website