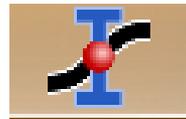


Física Experimental 1

Tutorial SciDavis



Prof. Dr. Walmor Cardoso Godoi

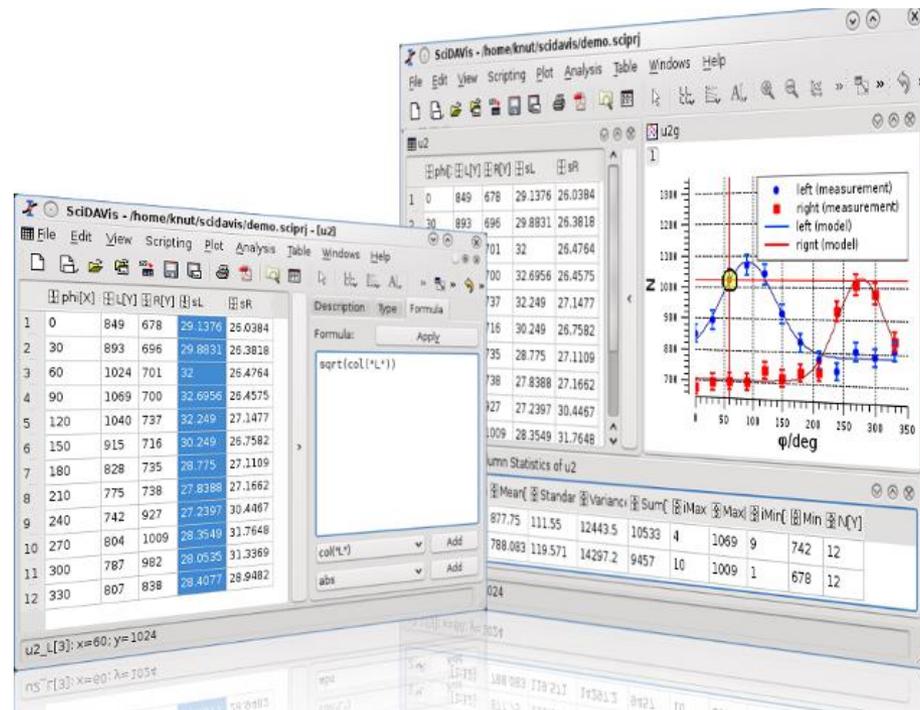
Departamento de Física

Universidade Tecnológica Federal do Paraná

<http://www.walmorgodoi.com/utfpr>

Introdução

- SciDAVis is a free application for Scientific Data Analysis and Visualization.
- Download <http://scidavis.sourceforge.net/>
 - Linux
 - Windows
 - Mac



Home / Browse / Science & Engineering / Visualization / SciDAVIS



SciDAVIS

Brought to you by: hpcoder, knut_f, thzs

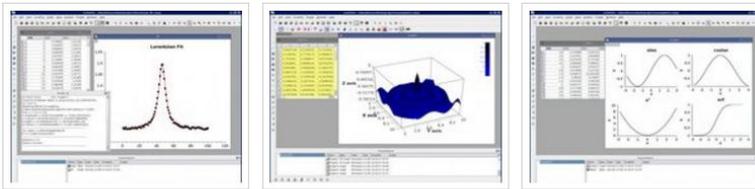
Summary Files Reviews Support Wiki Mailing Lists Tickets News Discussion Svn (deprecated) Source Repository

★ 4.8 Stars (40)
↓ 2,407 Downloads (This Week)
📅 Last Update: 2016-07-29

Download
scidavis.1.D013-win-dist.msi

Tweet G+ 12 Curtin 10

Windows Linux Mac OS X [Browse All Files](#)



Description

SciDAVIS is a user-friendly data analysis and visualization program primarily aimed at high-quality plotting of scientific data. It strives to combine an intuitive, easy-to-use graphical user interface with powerful features such as Python scriptability.

[SciDAVIS Web Site](#)

[Report a problem with ad content](#)

You May Like

Sponsored Links



[Tiny Dev](#) Tiny Device Allows You To Track Anything (it's Genius!)

[You To Track Anything \(it's Genius!\)](#)

Trackr Bravo

[ready to conquer Ancient Greece?™™™](#)

Grepolis - Online Free Game



[Now You Can Track Your Car Using Your Smartphone](#)

Smart Device Trends



[This Dog Lives Longer Than Any Other Breed](#)

PetBreeds — By Graphiq

by Taboola

SciDAVIS - /data/thzs/scidavis/projects/lorentzian_fit.sciprj

File Edit View Scripting Graph Data Analysis Format Windows Help

Data

1[X]	2[Y]	3[Y]
1	1	0.796861
2	2	0.218407
3	3	0.605845
4	4	0.998285
5	5	0.207607
6	6	0.139991
7	7	0.264905
8	8	0.480205
9	9	0.191399
10	10	0.247975
11	11	0.733094
12	12	0.475639
13	13	0.389268
14	14	0.319974

Fit

Lorentzian Fit

Results Log

[27.06.07 23:42 Plot: "Graph1"]
 Lorentz fit of dataset: Table1_3, using function: $y_0 + 2A \frac{\gamma w}{4(x-x_c)^2 + w^2}$
 Weighting Method: No weighting
 Scaled Levenberg-Marquardt algorithm with tolerance = 0.0001
 From x = 1 to x = 100
 A (amplitude) = 4.53471541628089 +/- 7.03611951023615
 xc (center) = 46.619514254316 +/- 0.619443768894842
 w (width) = 10.0284694927031 +/- 29.4526418911155
 y0 (offset) = 1.20490666446865 +/- 0.139172389053913

Chi^2/dof = 2.39067822880098e-05
 R^2 = 0.995170432414919

Iterations = 13
 Status = success

Project Explorer

Name	Type	View	Size	Created	Label
Data Table	Normal	0.0 kB	27.06.07 23:37		
Fit	Graph	Normal	0.0 kB	27.06.07 23:38	

SciDAVis - /data/thrs/scidavis/projects/example02.sciprj

File Edit View Scripting Format Windows Help

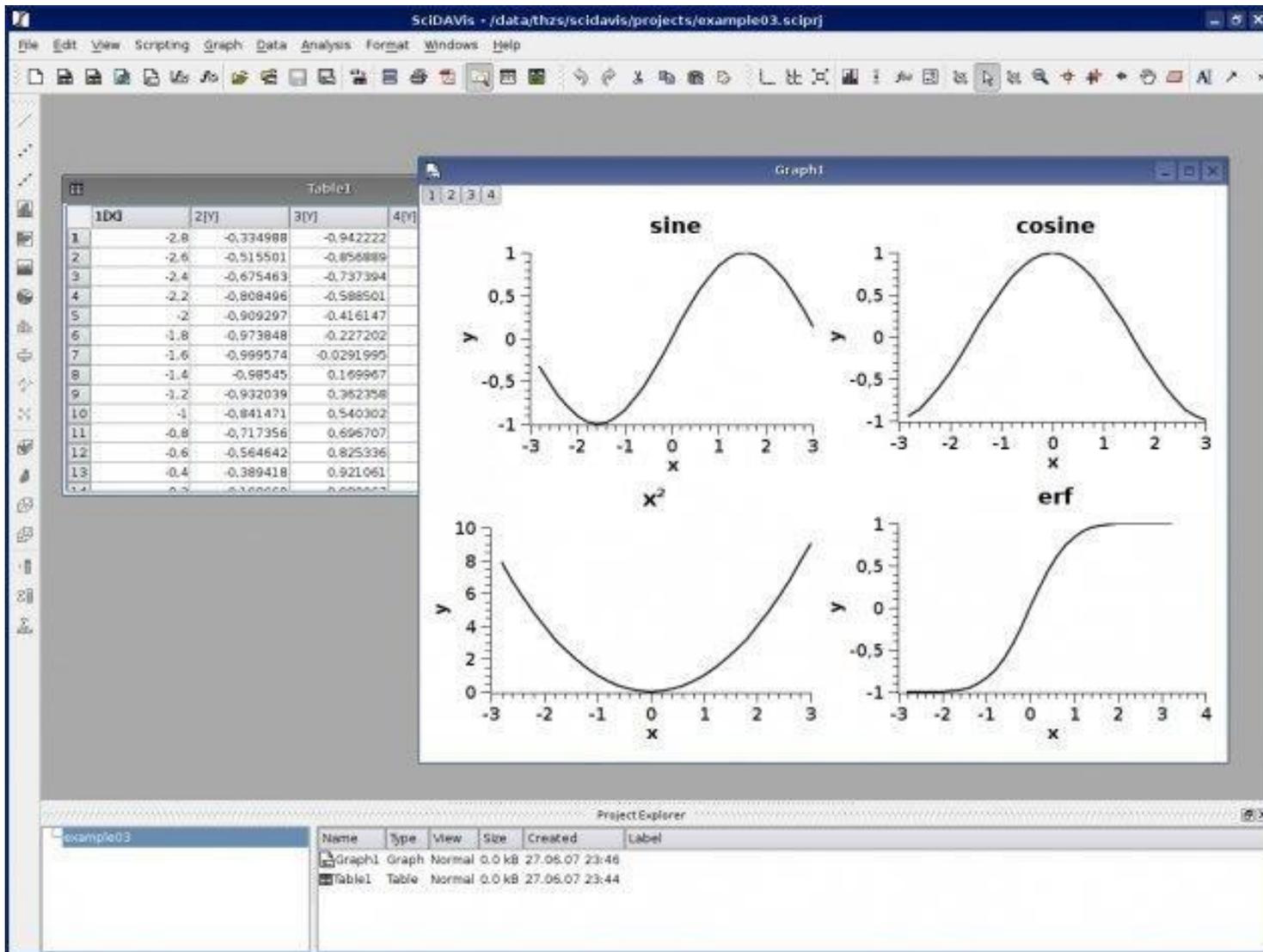
Matrix2

	1	2	3
1	-0.00027146...	0.11258762...	0.17519301...
2	0.11258762...	0.17706170...	0.15686874...
3	0.17519301...	0.15686874...	0.05743448...
4	0.16528841...	0.06686126...	-0.07024275...
5	0.09353981...	-0.04982069...	-0.16691372...
6	-0.00813729...	-0.14659367...	-0.19599162...
7	-0.10427551...	-0.19355339...	-0.15473528...
8	-0.16985425...	-0.18473181...	-0.06685406...
9	-0.19580124...	-0.13524067...	0.03434009...
10	-0.18672780...	-0.06055504...	0.12135617...
11	-0.15473528...	0.01341408...	0.18020181...

Graph7

Project Explorer

Name	Type	View	Size	Created	Label
Graph1	3D Graph	Minimized	0.0 kB	24.06.07 00:37	
Graph2	3D Graph	Minimized	0.0 kB	24.06.07 00:40	
Graph3	Graph	Minimized	0.0 kB	24.06.07 00:58	
Graph4	Graph	Minimized	0.0 kB	24.06.07 01:00	
Graph5	Graph	Minimized	0.0 kB	24.06.07 01:07	



Registro de resultados aqui

Tabela1

	1[X]	2[Y]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Description | Type | Formula

Apply

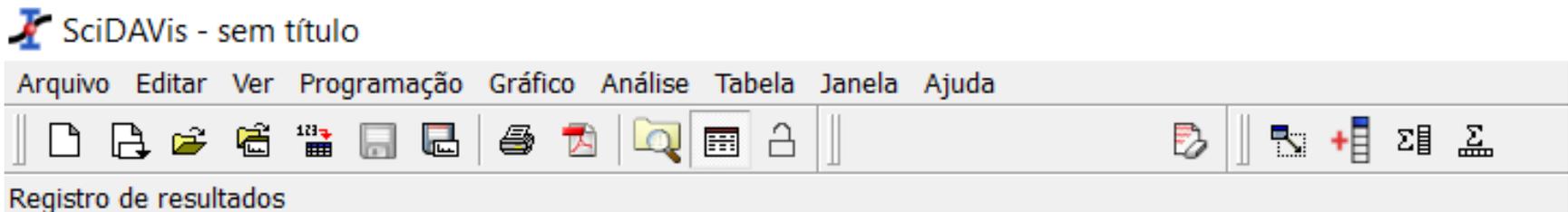
Type: Numeric

Format: Decimal

Decimal Digits: 6

Selected column type:
Double precision
floating point values
Example: 123.123457

Barra de Tarefas



Arquivo Editar Ver Programação Gráfico Análise Tabela Janela Ajuda

Novo

📂 Abrir... Ctrl+O

Projetos recentes

Abrir arquivo de imagem... Ctrl+I

Importar imagem...

💾 Salvar projeto Ctrl+S

Salvar projeto como...

📄 Abrir modelo...

📄 Salvar como modelo...

Exportar gráfico

🖨️ Imprimir... Ctrl+P

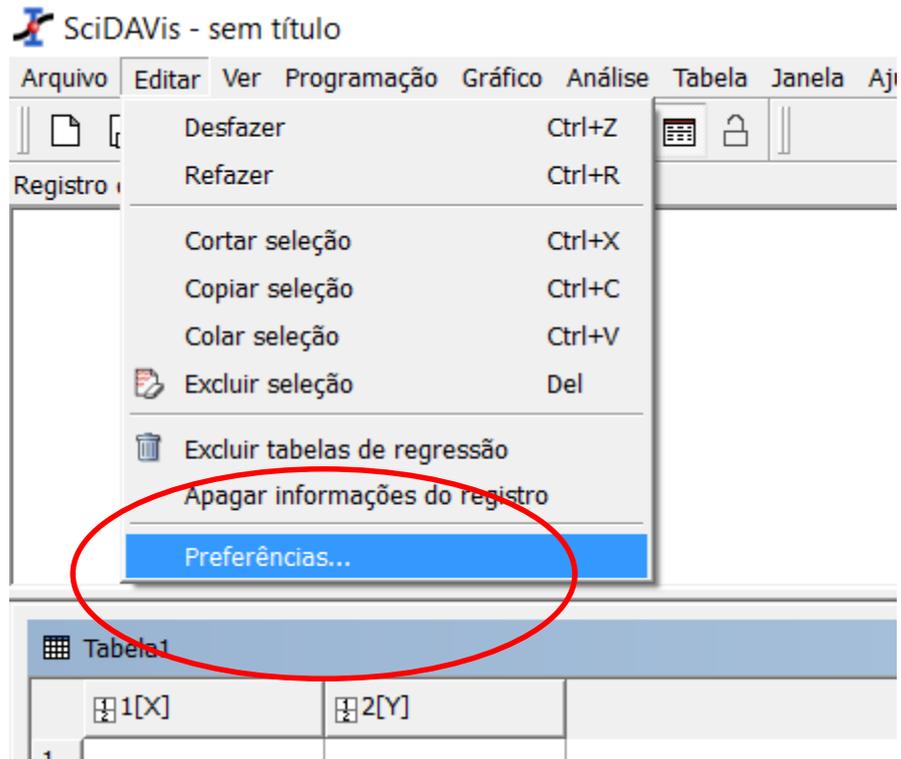
Imprimir todos os gráficos...

Exportar para ASCII...

📄 Importar arquivo ASCII... Ctrl+K

🚪 Sair Ctrl+Q

5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		





Geral



Tabelas



Gráficos 2D



Gráficos 3D



Ajuste

Geral

Aplicação | Confirmações | Cores | Formato numérico

Idioma

Estilo

Fonte principal

Linguagem de script padrão

Salvar a cada

Desfazer/Refazer - limite de histórico

Buscar novas versões no início

Aplicar

OK

Cancelar

Gráfico

SciDAVis - sem título

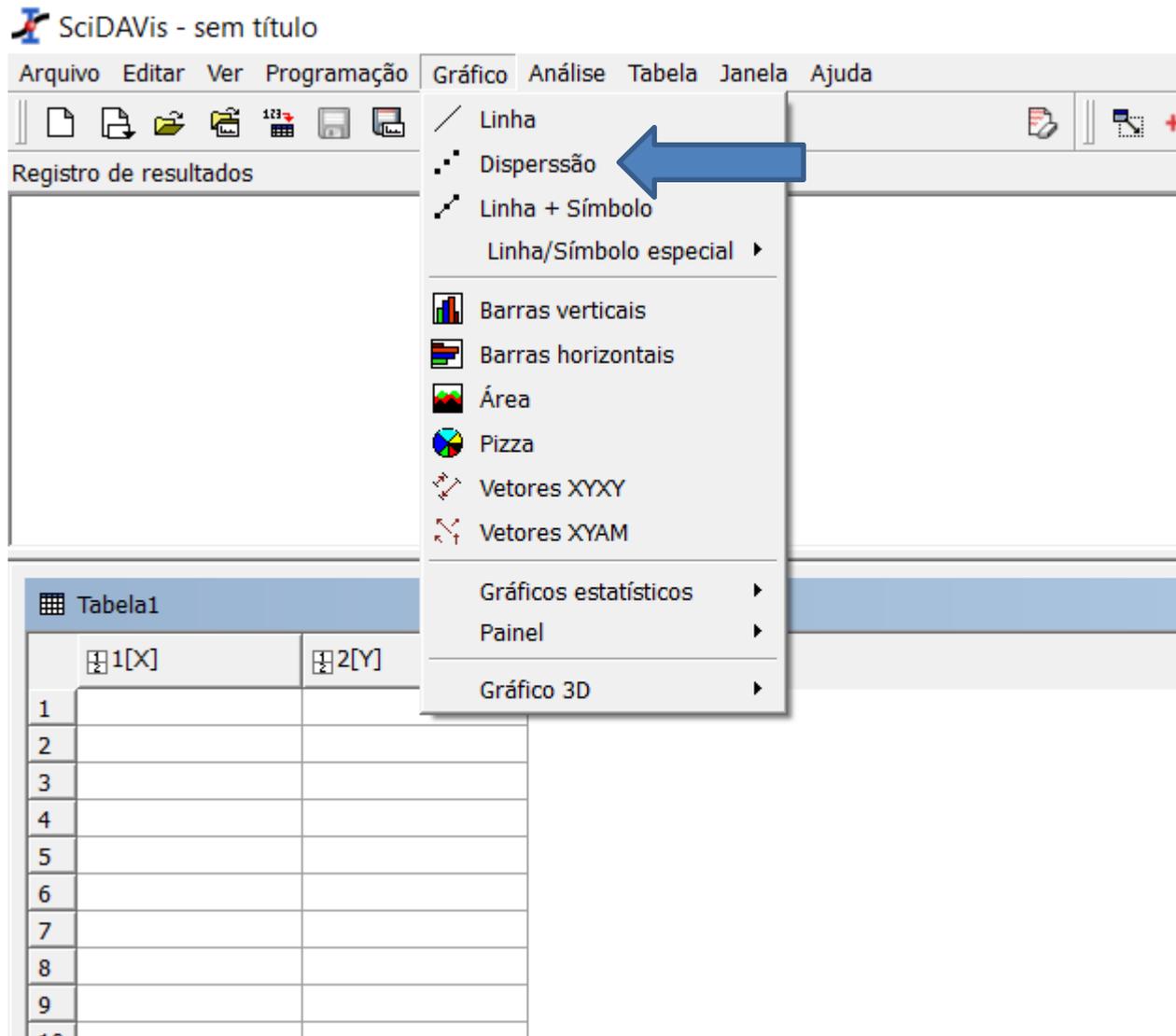
Arquivo Editar Ver Programação Gráfico Análise Tabela Janela Ajuda

Registro de resultados

Linha
Dispersão
Linha + Símbolo
Linha/Símbolo especial
Barras verticais
Barras horizontais
Área
Pizza
Vetores XYXY
Vetores XYAM
Gráficos estatísticos
Painel
Gráfico 3D

Tabela1

	1[X]	2[Y]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

The image shows the SciDAVis software interface. At the top, there is a title bar 'SciDAVis - sem título' and a menu bar with 'Arquivo', 'Editar', 'Ver', 'Programação', 'Gráfico', 'Análise', 'Tabela', 'Janela', and 'Ajuda'. Below the menu bar is a toolbar with various icons. The 'Gráfico' menu is open, showing options: 'Linha', 'Dispersão', 'Linha + Símbolo', 'Linha/Símbolo especial', 'Barras verticais', 'Barras horizontais', 'Área', 'Pizza', 'Vetores XYXY', 'Vetores XYAM', 'Gráficos estatísticos', 'Painel', and 'Gráfico 3D'. A blue arrow points to the 'Dispersão' option. Below the menu is a 'Registro de resultados' area, which is currently empty. At the bottom, there is a table titled 'Tabela1' with two columns: '1[X]' and '2[Y]'. The table has 10 rows, numbered 1 to 10, and all cells are empty.

Análise dados das Colunas

SciDAVis - sem título

Arquivo Editar Ver Programação Gráfico **Análise** Tabela Janela Ajuda

Estadísticas em coluna
Estadísticas em linhas
FFT...
Correlacionar
Autocorrelacionar
Convolucionar
Deconvolucionar
Assistente de ajuste... Ctrl+Y

Registro de resultados

Tabela1

	1[X]	2[Y]
1		
2		
3		

Abas

The image shows a software interface with a table and a right-hand panel. The table has 22 rows and 2 columns. The first column is labeled 'D (m)[X]' and the second column is labeled '2[Y]'. The first 20 rows are highlighted in blue. The right-hand panel has three tabs: 'Description', 'Type', and 'Formula'. The 'Description' tab is active, showing a 'Name' field with the value 'D (m)' and a 'Comment' field. There is also an 'Apply' button and navigation arrows.

	D (m)[X]	2[Y]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Table: Tabela1

Columns: D (m)[X], 2[Y]

Right Panel: Description, Type, Formula

Name: D (m)

Comment:

Apply

Tabela1

	D (m)[X]	2[Y]
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Description | Type | Formula

Apply

Type: Numeric

Format: Automatic (e)

Decimal Digits: 6

Selected column type:
Double precision
floating point values
Example: 123.123

Chc
disp

Tabela1

	D (m)[X]	2[Y]	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

Description | Type | Formula

Formula:

col("D (m)"/col("2"))

col("2")

abs

The image shows a software interface with a data table on the left and a formula editor on the right. The table has three columns: 't(s)[X]', 'errot(s)[xEr]', and '1[Y]'. The '1[Y]' column is highlighted in blue. The formula editor on the right has tabs for 'Description', 'Type', and 'Formula'. The 'Formula' tab is active, showing the formula $(col("t(s)))^2$. Below the formula editor, there are two dropdown menus: one with 'col("t(s)")' and another with 'abs', each with an 'Add' button.

t(s)[X]	errot(s)[xEr]	1[Y]
0,391	0,002	0,152881
0,548	0,002	0,300304
0,668	0,004	0,446224
0,77	0,001	0,5929
0,86	0,001	0,7396
0,943	0,002	0,889249
1,019	0,002	1,03836
		0
		0
		0
		0

Formula:

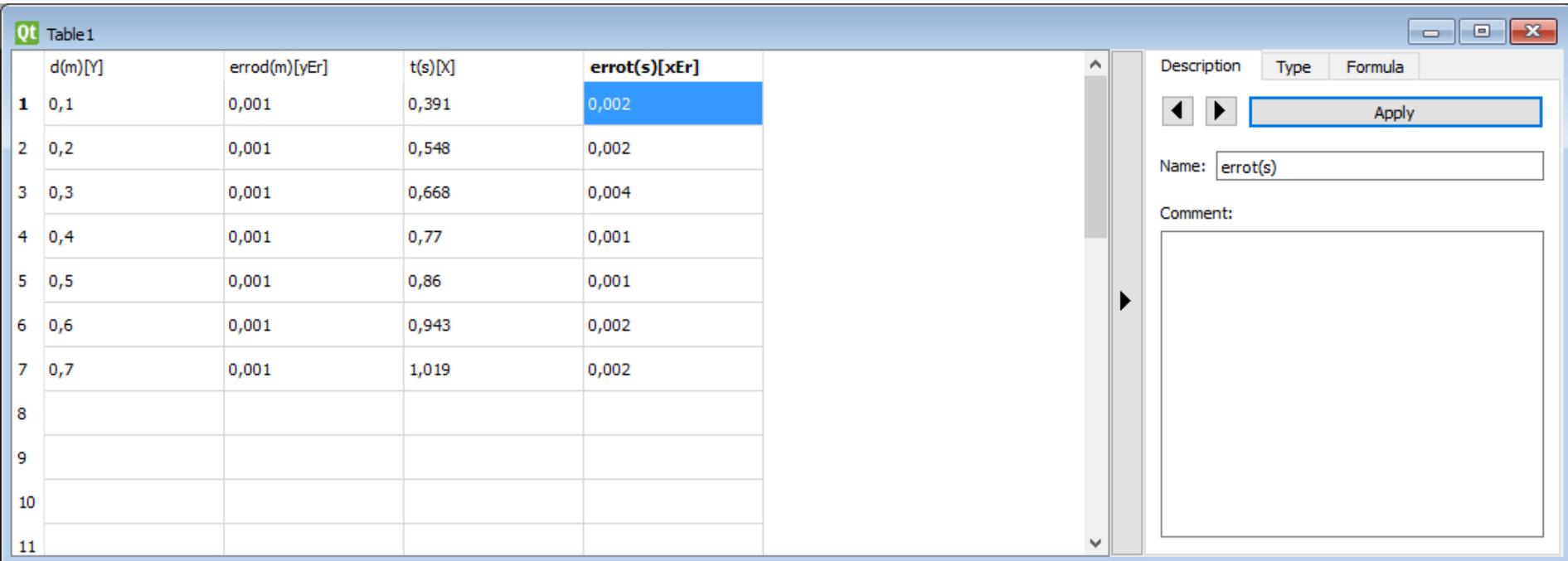
$(col("t(s)))^2$

col("t(s)")

abs

MRUV

Inserindo os dados



The image shows a software interface with a table and a configuration panel. The table has 4 columns: d(m)[Y], errod(m)[yEr], t(s)[X], and errot(s)[xEr]. The configuration panel on the right has tabs for Description, Type, and Formula, and an Apply button. The Name field is set to errot(s).

	d(m)[Y]	errod(m)[yEr]	t(s)[X]	errot(s)[xEr]
1	0,1	0,001	0,391	0,002
2	0,2	0,001	0,548	0,002
3	0,3	0,001	0,668	0,004
4	0,4	0,001	0,77	0,001
5	0,5	0,001	0,86	0,001
6	0,6	0,001	0,943	0,002
7	0,7	0,001	1,019	0,002
8				
9				
10				
11				

Qt Table1

Description Type Formula

Apply

Name: errot(s)

Comment:

Defina as colunas

Qt Table 1

	d(m)[Y]	errod(m)[yEr]	t(s)[X]	errot(s)
1	0,1	0,001	0,391	0,002
2	0,2	0,001	0,548	0,002
3	0,3	0,001	0,668	0,004
4	0,4	0,001	0,77	0,001
5	0,5	0,001	0,86	0,001
6	0,6	0,001	0,943	0,002
7	0,7	0,001	1,019	0,002
8				
9				
10				
11				

Plot

Set Column(s) As

- X
- Y
- Z
- X Error
- Y Error
- None

Fill Selection with

Insert Empty Columns

Remove Columns

Clear Columns

Add Columns

Normalize Columns

Sort Columns

Edit Column Description

Change Type & Format Ctrl+Alt+O

Show Comments

Column Statistics

Qt Table 1

	d(m)[Y]	e	errot(s)[xEr]	1[Y]
1	0,1	0,000	0,002	0,152881
2	0,2	0,000	0,002	0,300304
3	0,3	0,000	0,004	0,446224
4	0,4	0,000	0,001	0,5929
5	0,5	0,000	0,001	0,7396
6	0,6	0,000	0,002	0,889249
7	0,7	0,000	0,002	1,03836
8				0
9				0
10				0
11				0

- Line
- Scatter**
- Line + Symbol
- Special Line/Symbol ▶

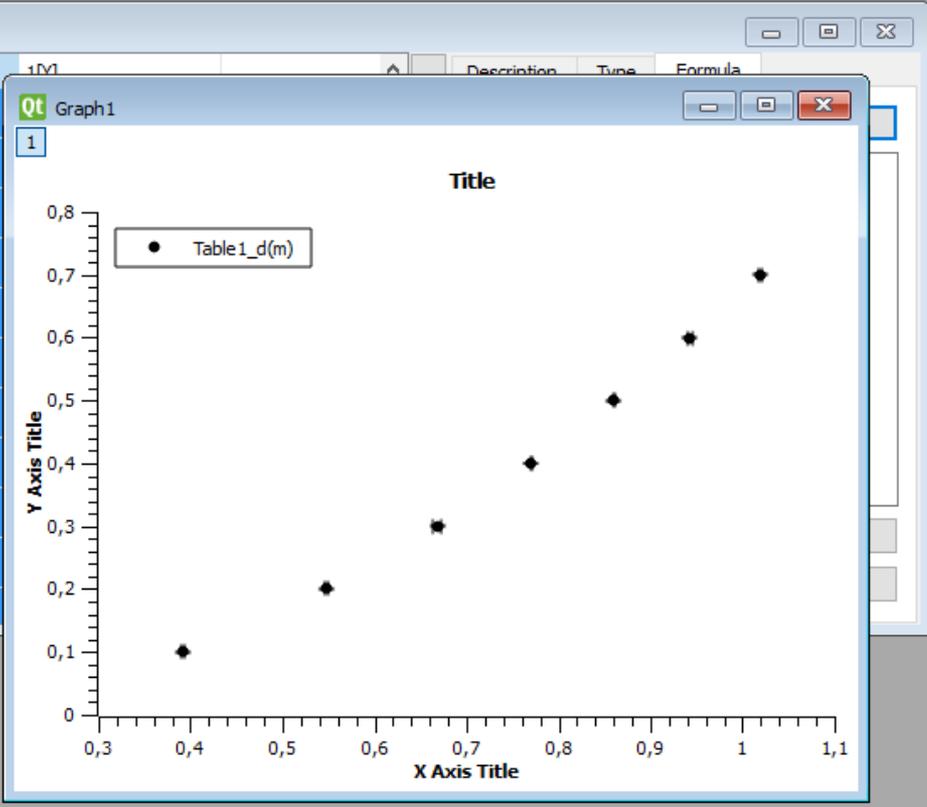
- Vertical Bars
- Horizontal Bars
- Area
- Pie
- Vectors XXY
- Vectors XYAM

- Statistical Graphs ▶
- Panel ▶

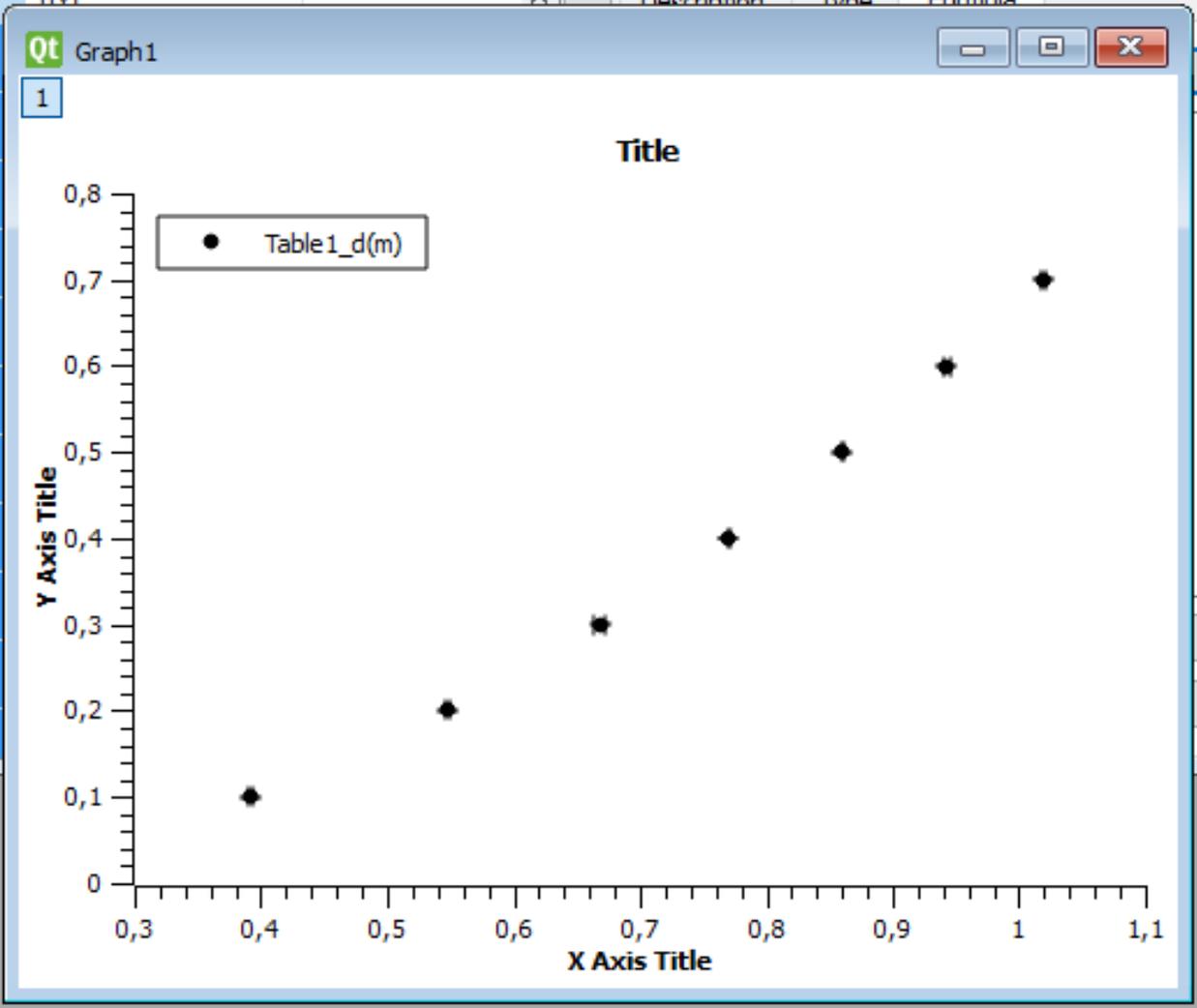
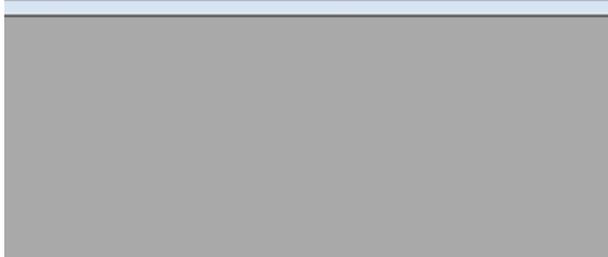
- 3D Plot ▶

Qt Table1

	d(m)[Y]	errod(m)[yEr]	t(s)[X]	errot(s)[xEr]
1	0,1	0,001	0,391	0,002
2	0,2	0,001	0,548	0,002
3	0,3	0,001	0,668	0,004
4	0,4	0,001	0,77	0,001
5	0,5	0,001	0,86	0,001
6	0,6	0,001	0,943	0,002
7	0,7	0,001	1,019	0,002
8				
9				
10				
11				



t(s)[xEr]	1M	Description	Type	Formula
0,943	0,002			
1,019	0,002			



Category	Function	Expression
User defined	abs()	abs(x): Absolute value of x.
Built-in	acos()	
Basic	acosh()	
Plugins	asin()	
	asinh()	
	atan()	
	atanh()	
	avg()	
	bessel_j0()	
	bessel_j1()	
	bessel_jn()	
	bessel_y0()	

Name

MRUV

Save

Parameters

a

Remove

 $(0.5)*a*(x^2)$

Add expression

Add name

Reset

Close

Fit >>

Curve Table1_d(m)

Function MRUV (x, a)

 $(0.5)*a*(x^2)$

Initial guesses

Parameter	Value	Constant
a	1,0000000000000000	<input type="checkbox"/>

Algorithm Scaled Levenberg-Marquardt

Color  red

From x= 0,391

To x= 1,019

Iterations 1000

Tolerance 1e-4

Y Error Source

Errors Unknown

Table1

d(m)

<< Edit function

Delete Fit Curves

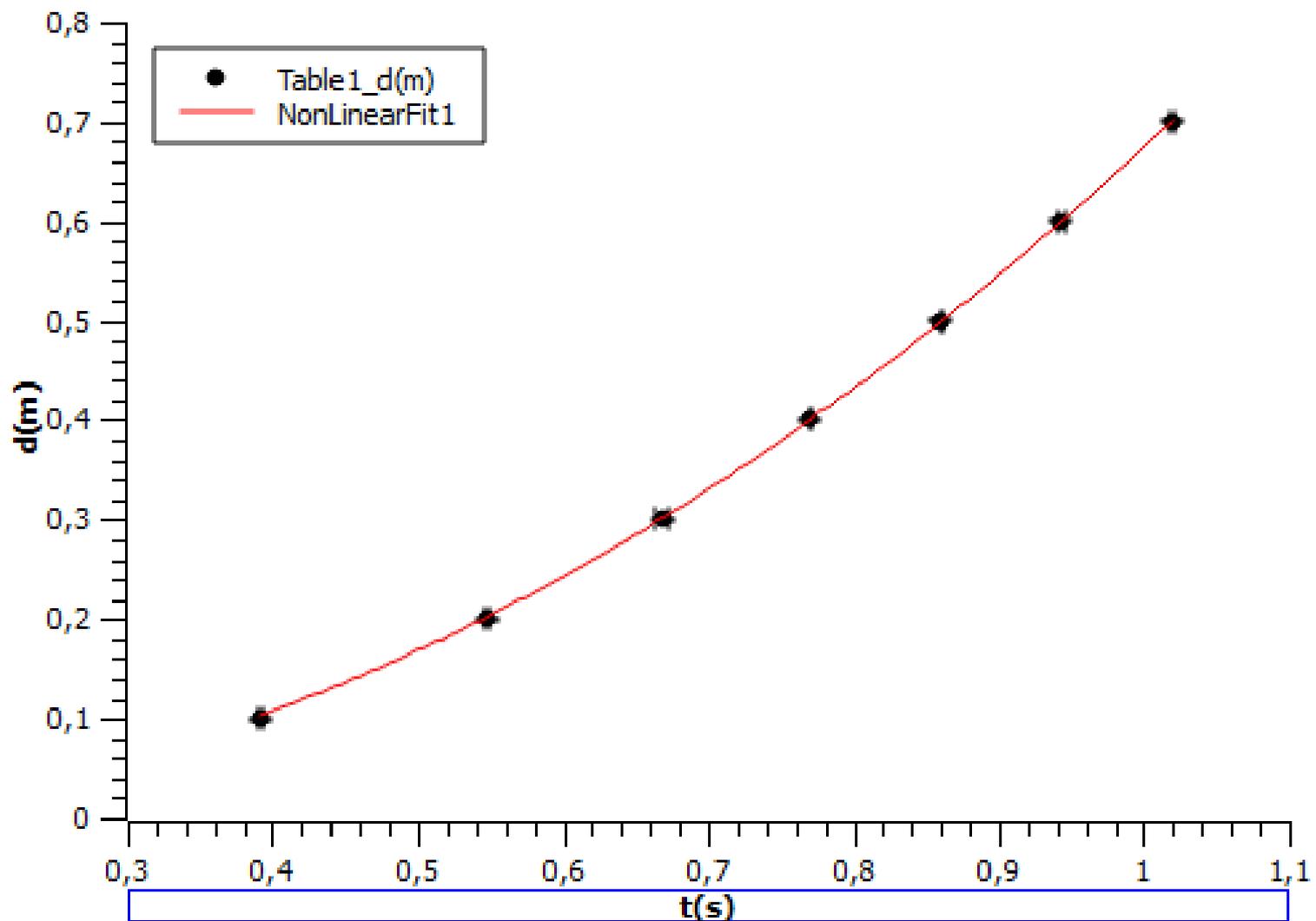
Fit

Close

Custom Output >>

1

MRUV



Results Log

[04/04/2016 10:53:19 Plot: "Graph1"]
Non-linear fit of dataset: Table1_d(m), using function: $(0.5)*a*(x^2)$
Y standard errors: Unknown
Scaled Levenberg-Marquardt algorithm with tolerance = 0,0001
From x = 0,391 to x = 1,019
a = 1,34835435022482 +/- 0,001994268829558

Chi²/doF = 3,06253914852823e-06
R² = 0,999934374161103

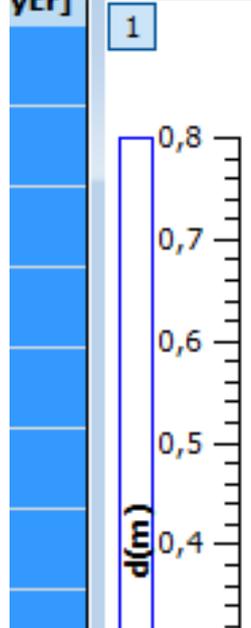
Iterations = 1
Status = success

- Translate
- Differentiate
- Integrate ...
- Smooth
- FFT Filter
- Interpolate ...
- FFT...

- Quick Fit
- Fit Wizard... Ctrl+Y

- Fit Linear
- Fit Polynomial ...
- Fit Exponential Decay
- Fit Exponential Growth ...
- Fit Boltzmann (Sigmoidal)
- Fit Gaussian
- Fit Lorentzian
- Fit Multi-peak

Qt Graph2



• Table1_d(m)



Results Log

[04/04/2016 11:00:38 Plot: "Graph2"]
 Linear Regression fit of dataset: Table1_d(m), using function: $A \cdot x + B$
 Y standard errors: Associated dataset (Table1_errord(m))
 From $x = 0,391$ to $x = 1,019$
 B (y-intercept) = $-0,313948516361992 \pm 0,00141174741823283$
 A (slope) = $0,961269400756673 \pm 0,00183140529703997$

$\chi^2/\text{doF} = 900,037948627526$

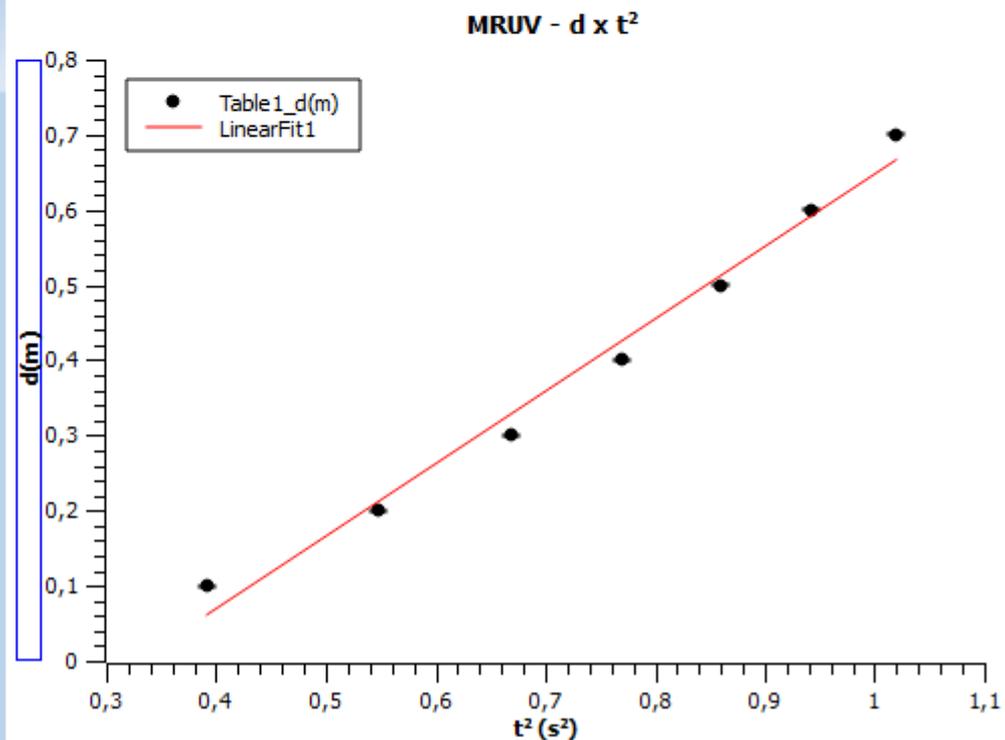
$R^2 = 0,983927893774509$

Qt Table1

	d(m)[Y]	errord(m)[yEr]
1	0,1	0,001
2	0,2	0,001
3	0,3	0,001
4	0,4	0,001
5	0,5	0,001
6	0,6	0,001
7	0,7	0,001
8		
9		
10		
11		

Qt Graph2

1



Results Log

[04/04/2016 11:00:38 Plot: "Graph2"]
Linear Regression fit of dataset: Table1_d(m), using function: $A*x+B$
Y standard errors: Associated dataset (Table1_errord(m))
From $x = 0,391$ to $x = 1,019$
B (y-intercept) = $-0,313948516361992 \pm 0,00141174741823283$
A (slope) = $0,961269400756673 \pm 0,00183140529703997$

$\text{Chi}^2/\text{doF} = 900,037948627526$
 $R^2 = 0,983927893774509$

[06/12/2015 14:48:36 Plot: "Graph1"]
 Non-linear fit of dataset: Table1_2, using function: $a0 \cdot \exp(-b \cdot x / (2^m))$
 Y standard errors: Unknown
 Scaled Levenberg-Marquardt algorithm with tolerance = 0,0001
 From x = 0 to x = 291,09
 $a0 = 19,1553680871678 \pm 0,434425854622523$
 $b = 248,812295129407 \pm 14,047,4509248879$
 $m = 27,866,0086754875 \pm 1,573,610,52298483$

 $\chi^2 / \text{doF} = 0,460668934899916$
 $R^2 = 0,986289615032741$

Tempo(s)[X]	Amplitude(cm)[Y]
0	20
15,47	18
34,62	16
57,4	14
100,05	12
142	10
200,39	8
291,09	6

Qt Table1

Description Type Formula

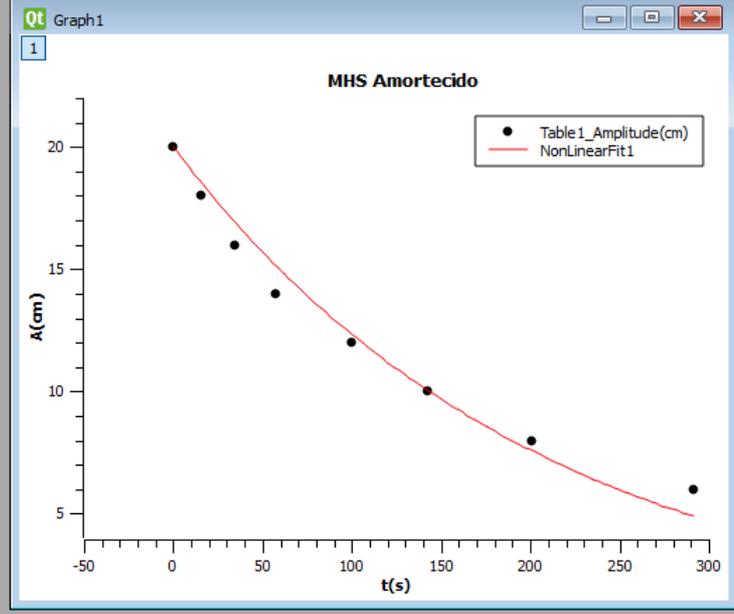
Apply

Type: Numeric

Format: Decimal

Decimal Digits: 6

Selected column type:
 Double precision
 floating point values
 Example: 123.123457



Results Log

[06/12/2015 14:48:36

Plot: "Graph1"]

Non-linear fit of dataset: Table1_2, using function: $a_0 \cdot \exp(-b \cdot x / (2 \cdot m))$

Y standard errors: Unknown

Scaled Levenberg-Marquardt algorithm with tolerance = 0,0001

From $x = 0$ to $x = 291,09$

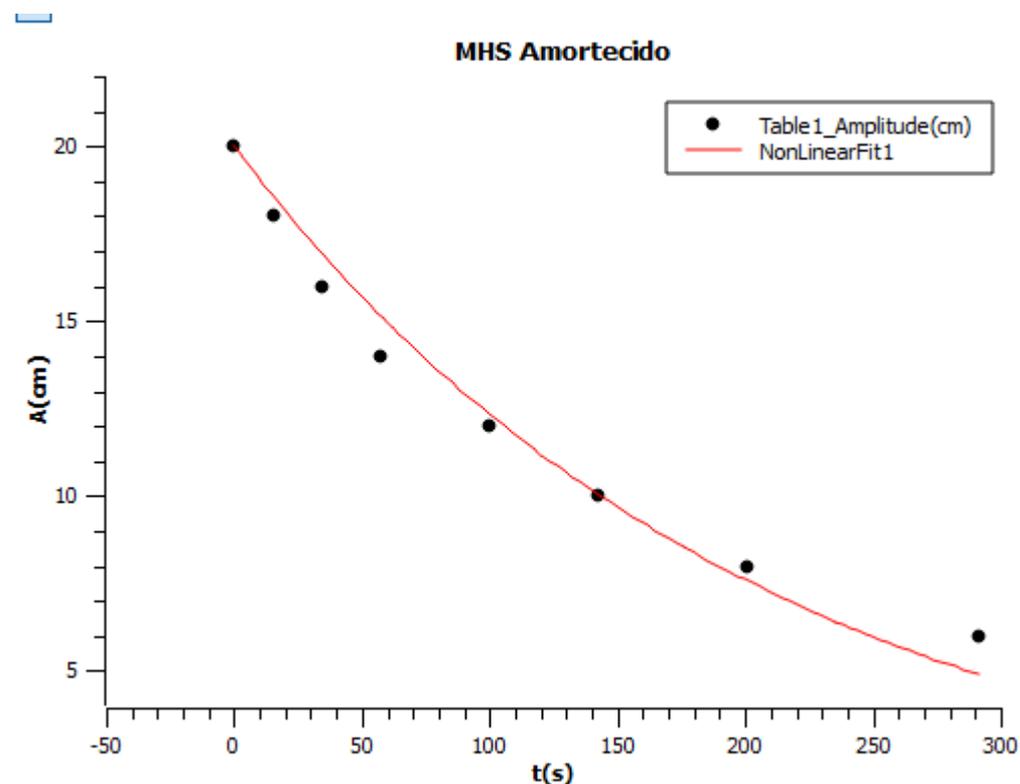
$a_0 = 19,1553680871678 \pm 0,434425854622523$

$b = 248,812295129407 \pm 14,047,4509248879$

$m = 27.866,0086754875 \pm 1.573.610,52298483$

$\chi^2/\text{doF} = 0,460668934899916$

$R^2 = 0,986289615032741$



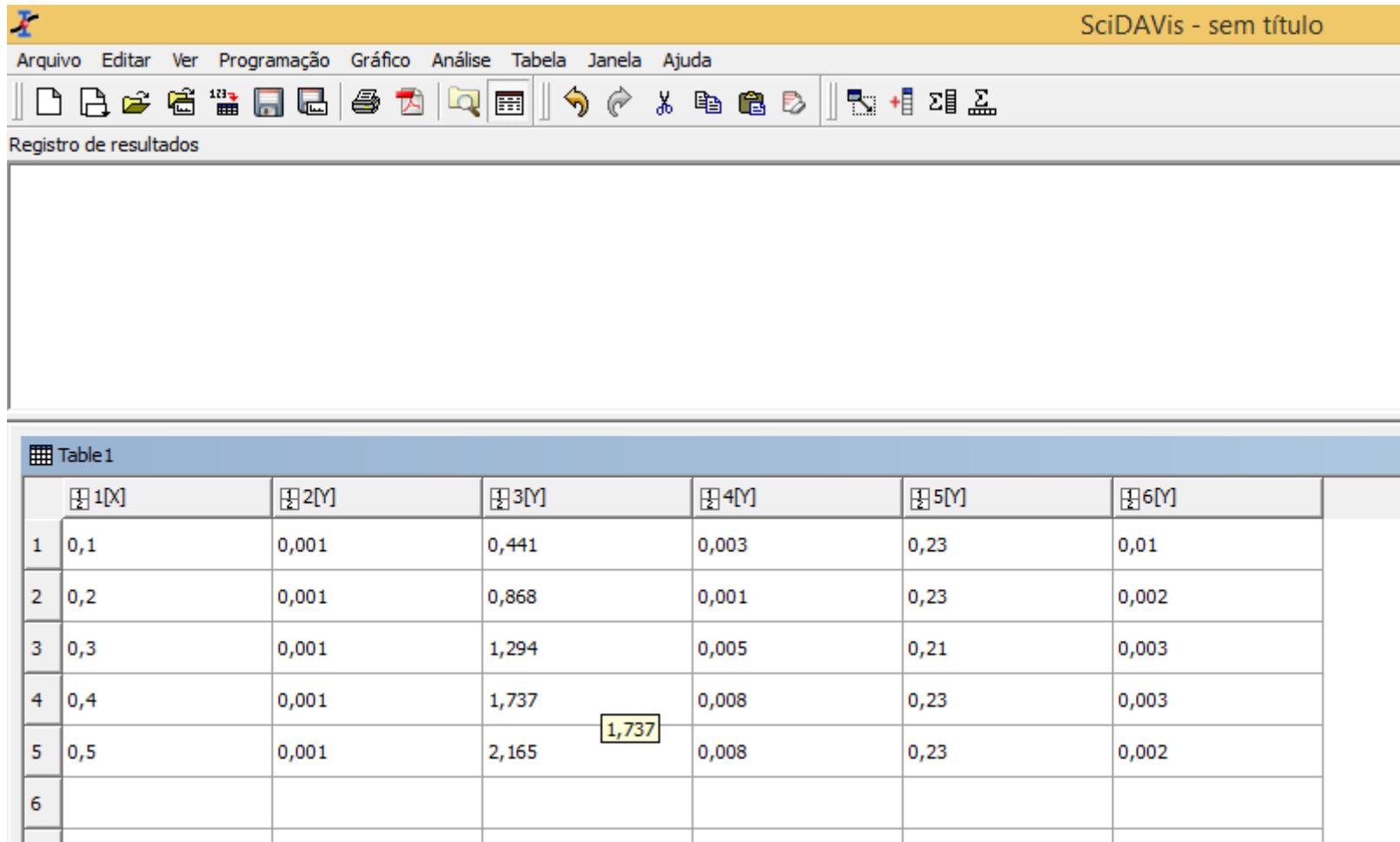
Inserindo os dados

Mais um exemplo - MRU

- Exemplo: Dados do experimento MRU

Distância (m)	erroDistância (m)	Tempo* (s)	erroTempo ** (s)	Velocidade (m/s)	erroVelocidade (m/s)
0,100	0,001	0,441	0,003	0,23	0,010
0,200	0,001	0,868	0,001	0,23	0,002
0,300	0,001	1,294	0,005	0,21	0,003
0,400	0,001	1,737	0,008	0,23	0,003
0,500	0,001	2,165	0,008	0,23	0,002

Inserindo os dados

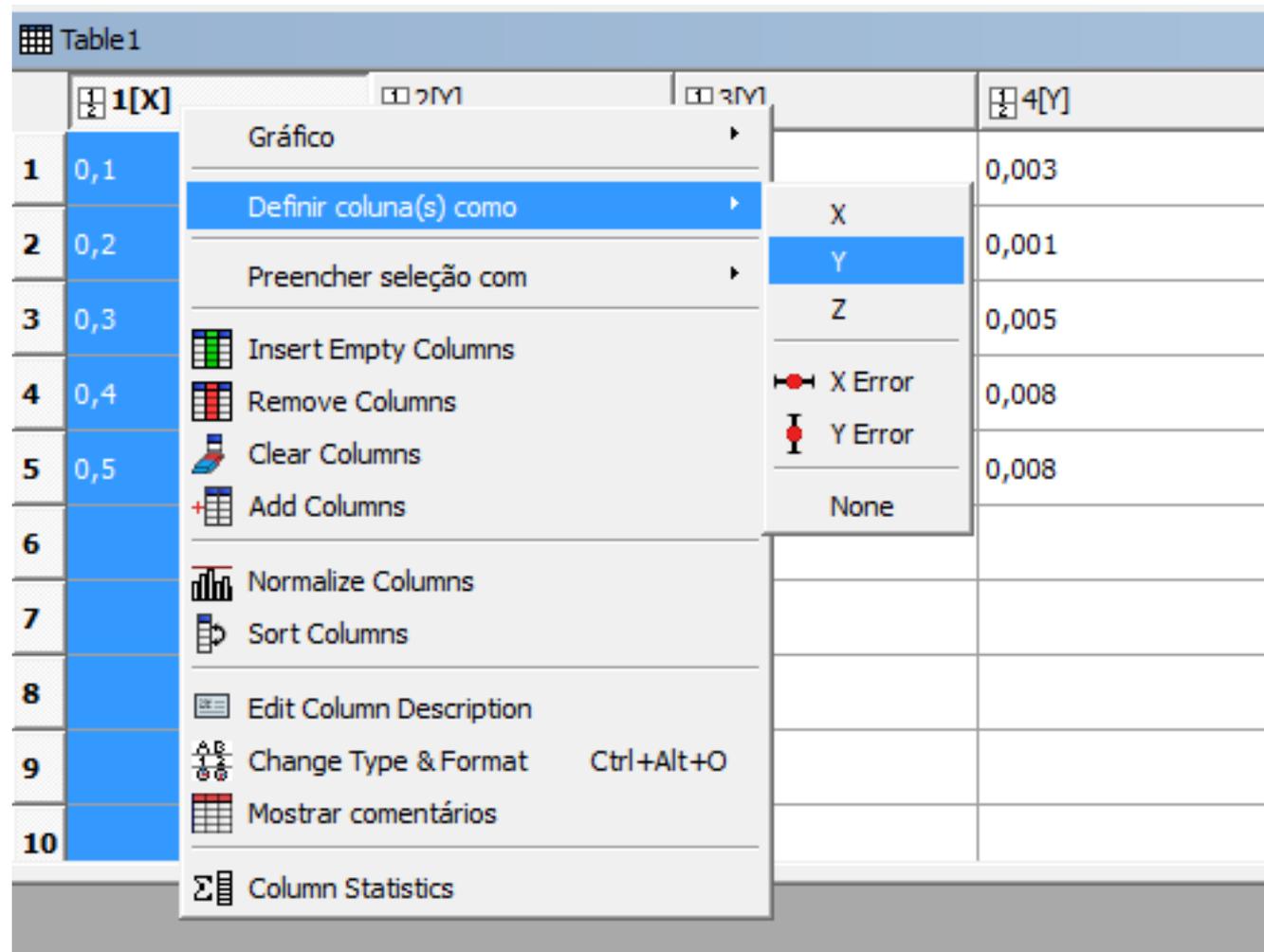


The image shows the SciDAVis software interface. At the top, there is a yellow title bar with the SciDAVis logo on the left and the text "SciDAVis - sem título" on the right. Below the title bar is a menu bar with the following items: Arquivo, Editar, Ver, Programação, Gráfico, Análise, Tabela, Janela, Ajuda. Below the menu bar is a toolbar with various icons for file operations, editing, and data analysis. Below the toolbar is a section labeled "Registro de resultados" which is currently empty. At the bottom of the interface is a table titled "Table1". The table has 7 columns and 6 rows. The columns are labeled 1[X], 2[Y], 3[Y], 4[Y], 5[Y], and 6[Y]. The rows contain numerical data. The value 1,737 in the cell at row 5, column 3 is highlighted with a yellow border.

	1[X]	2[Y]	3[Y]	4[Y]	5[Y]	6[Y]
1	0,1	0,001	0,441	0,003	0,23	0,01
2	0,2	0,001	0,868	0,001	0,23	0,002
3	0,3	0,001	1,294	0,005	0,21	0,003
4	0,4	0,001	1,737	0,008	0,23	0,003
5	0,5	0,001	2,165	0,008	0,23	0,002
6						

Definir tipo de colunas

Clique com o lado direito do mouse em cima da coluna para definir o tipo dela



The image shows a spreadsheet application window titled "Table1". The spreadsheet has 10 rows and 4 columns. The first column is labeled "1[X]" and contains values 0,1 through 0,5. The second column is labeled "2[Y]" and is empty. The third column is labeled "3[Y]" and is empty. The fourth column is labeled "4[Y]" and contains values 0,003, 0,001, 0,005, 0,008, and 0,008. A context menu is open over the first column, with the "Definir coluna(s) como" option selected. A sub-menu is open over this option, showing "Y" as the selected type. Other options in the context menu include "Gráfico", "Preencher seleção com", "Insert Empty Columns", "Remove Columns", "Clear Columns", "Add Columns", "Normalize Columns", "Sort Columns", "Edit Column Description", "Change Type & Format" (with a keyboard shortcut of Ctrl+Alt+O), "Mostrar comentários", and "Column Statistics".

	1[X]	2[Y]	3[Y]	4[Y]
1	0,1			0,003
2	0,2			0,001
3	0,3			0,005
4	0,4			0,008
5	0,5			0,008
6				
7				
8				
9				
10				

Arquivo Editar Ver Programação Gráfico Análise Tabela Janela Ajuda

Registro de resultados

Table 1

	1[Y]	2[Y]	3[M]	4[M]	5[Y]
1	0,1	0,001			0,23
2	0,2	0,001			
3	0,3	0,001			
4	0,4	0,001			
5	0,5	0,001			
6					
7					
8					
9					
10					

Context menu options:

- Gráfico
- Definir coluna(s) como
 - X
 - Y
 - Z
 - X Error
 - Y Error
 - None
- Preencher seleção com
- Insert Empty Columns
- Remove Columns
- Clear Columns
- Add Columns
- Normalize Columns
- Sort Columns
- Edit Column Description
- Change Type & Format Ctrl+Alt+O
- Mostrar comentários
- Column Statistics

	d(m)[Y]	errod(m)[yEr]	t(s)[X]	errot(s)[xEr]	v(m/s)[Y]	errov(m/s)[yEr]
1	0,1	0,001	0,441	0,003	0,23	0,01
2	0,2	0,001	0,868	0,001	0,23	0,002
3	0,3	0,001	1,294	0,005	0,21	0,003
4	0,4	0,001	1,737	0,008	0,23	0,003
5	0,5	0,001	2,165	0,008	0,23	0,002
6						
7						
8						
9						
10						

Descrição | Tipo | Fórmula

Nome:

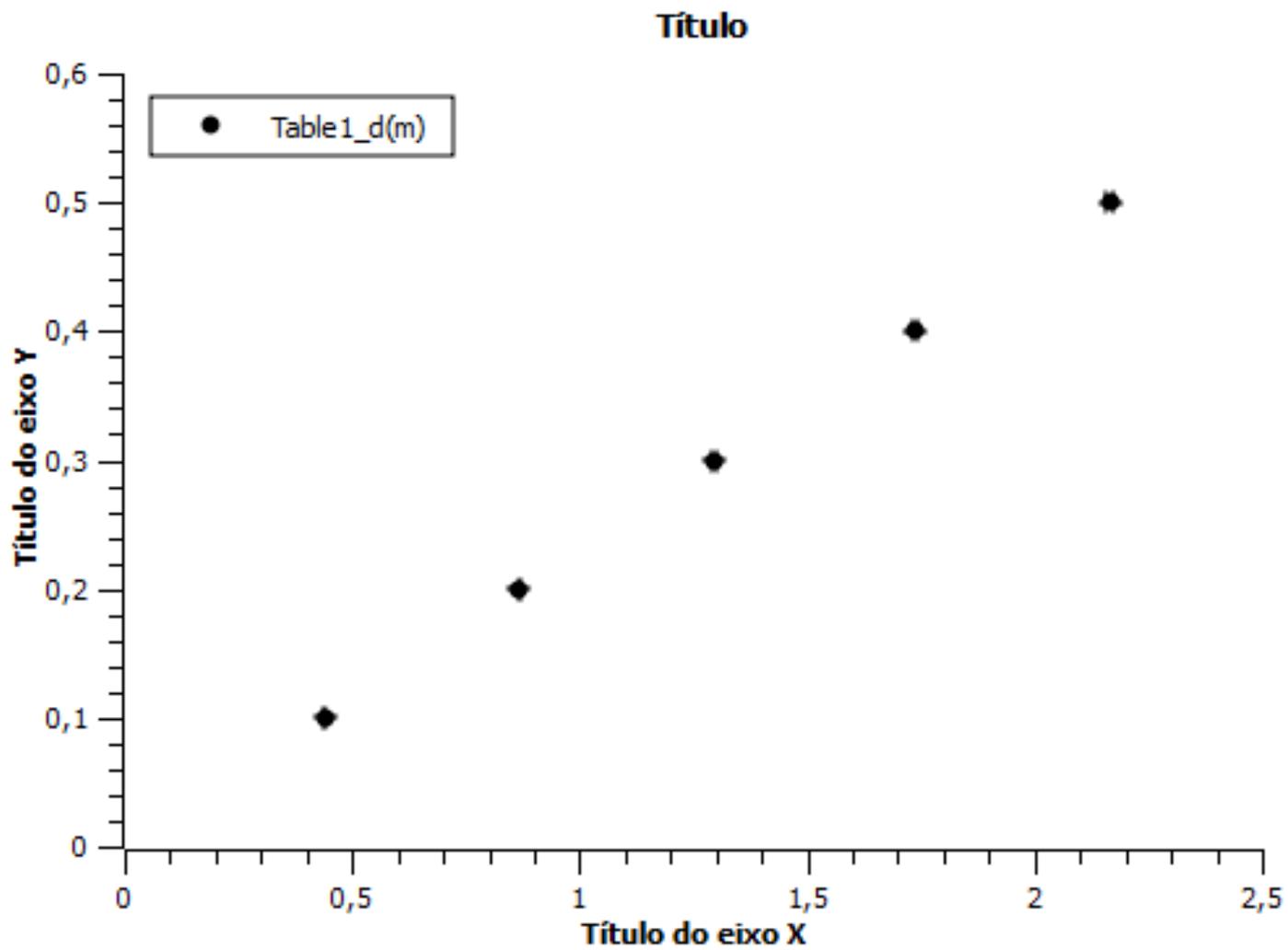
Comentário:

Gráfico

The image shows the SciDAVis software interface. At the top, the title bar reads "SciDAVis - sem título". The menu bar includes "Arquivo", "Editar", "Ver", "Programação", "Gráfico", "Análise", "Tabela", "Janela", and "Ajuda". The "Gráfico" menu is open, displaying various chart types: "Linha", "Dispersão" (highlighted), "Linha + Símbolo", "Linha/Símbolo especial", "Barras verticais", "Barras horizontais", "Área", "Pizza", "Vetores XYYX", and "Vetores XYAM". Below the menu, a table titled "Table1" is visible. The table has columns for "d(m)[Y]", "erro", "errot(s)[xEr]", "v(m/s)[Y]", and "errov(m/s)[yEr]". The first five rows of data are highlighted in blue.

	d(m)[Y]	erro		errot(s)[xEr]	v(m/s)[Y]	errov(m/s)[yEr]
1	0,1	0,001		0,003	0,23	0,01
2	0,2	0,001	0,868	0,001	0,23	0,002
3	0,3	0,001	1,294	0,005	0,21	0,003
4	0,4	0,001	1,737	0,008	0,23	0,003
5	0,5	0,001	2,165	0,008	0,23	0,002
6						
7						
8						
9						
10						

Gráfico



Renomear os eixos

The image shows the SciDAVis software interface. The main window displays a graph titled "Gráfico1" with a legend for "Table1_d(m)". The graph has a title "Título" and axes labeled "Título do eixo Y" and "Título do eixo X". The Y-axis ranges from 0 to 0,6 and the X-axis from 0 to 2,5. A dialog box titled "Opções de texto" is open, showing options for text color, font, and alignment. The text "Título" is highlighted in the dialog box.

SciDAVis - sem título

Arquivo Editar Ver Programação Gráfico Ferramentas Análise Formatar Janela Ajuda

Registro de resultados

Gráfico1

1

Título

• Table1_d(m)

Título do eixo Y

Título do eixo X

Opções de texto

Cor do texto

Fonte

Alinhamento

OK

Aplicar

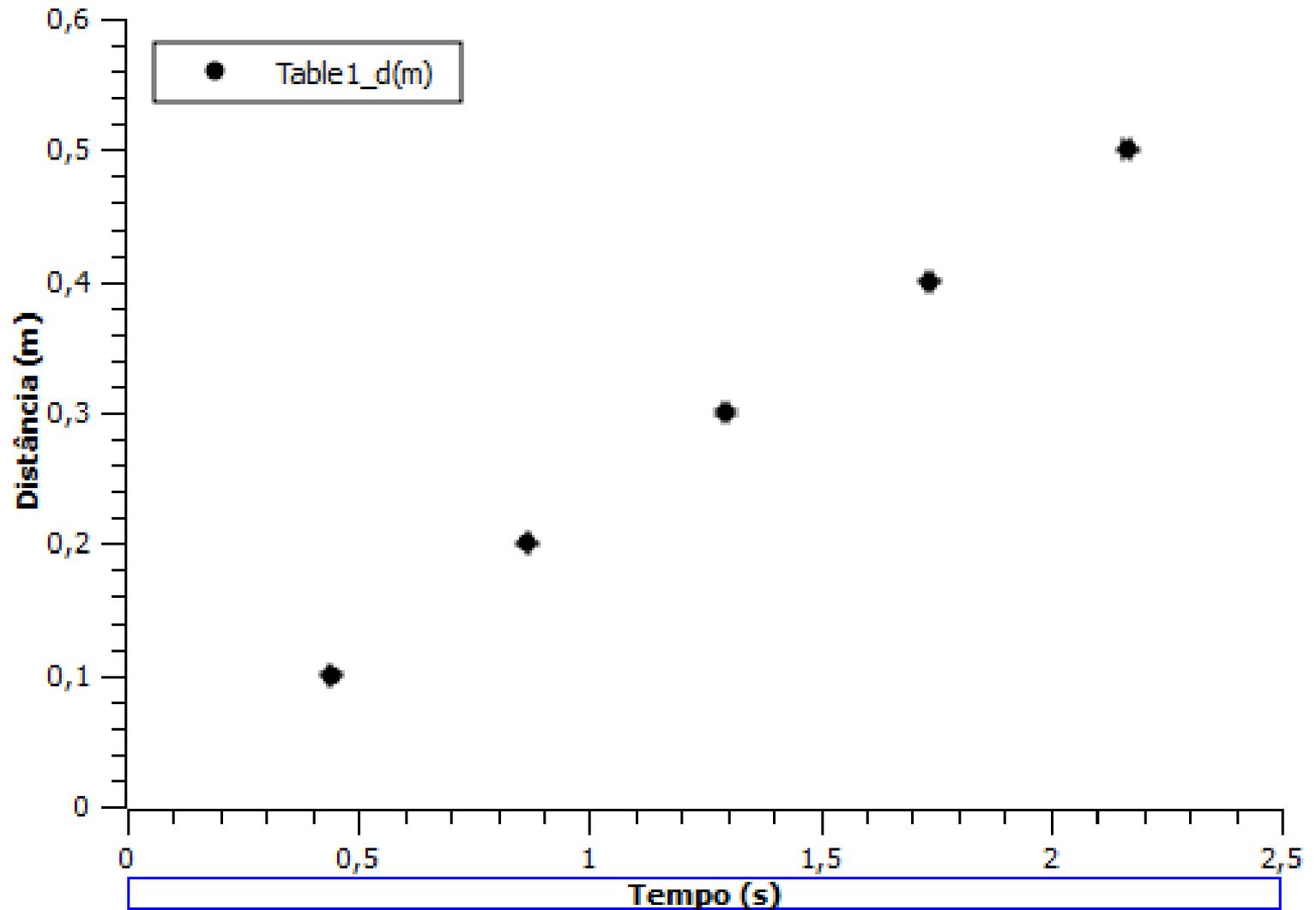
Cancelar

x_e x^2 α Γ \int \rightarrow **B** *It* U

Título

Título do eixo X	Título do eixo Y
0,4	0,1
0,8	0,2
1,2	0,3
1,6	0,4
2,0	0,5

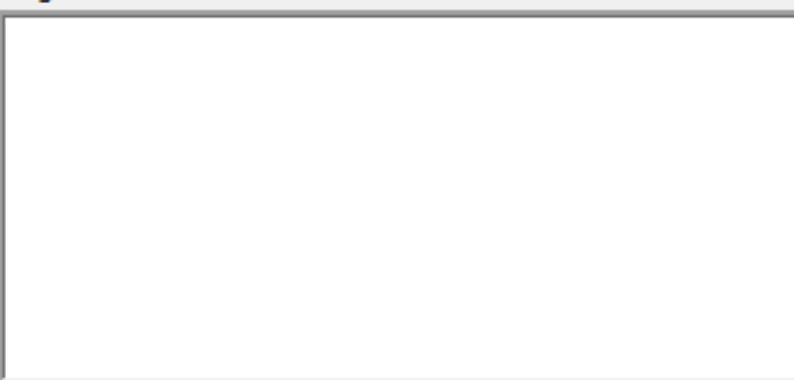
MRU



Arquivo Editar Ver Programação Gráfico Ferramentas Análise Formatar Janela Ajuda



Registro de resultados



Trasladar ▶

Derivar

Integrar ...

Suavizar ▶

Filtro FFT ▶

Interpolar...

FFT...

Quick Fit ▶

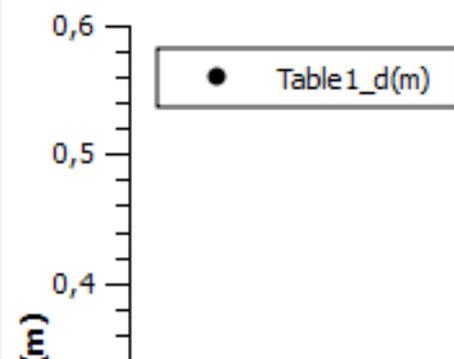
Assistente de ajuste... Ctrl+Y



Gráfico1

1

MRU



Regressão linear

Regressão polinomial ...

Fit Exponential Decay ▶

Ajuste por crescimento exponencial...

Ajuste Boltzmann (Sigmoidal)

Ajuste gaussiano

Ajuste lorenziano

Fit Multi-peak ▶

0,23

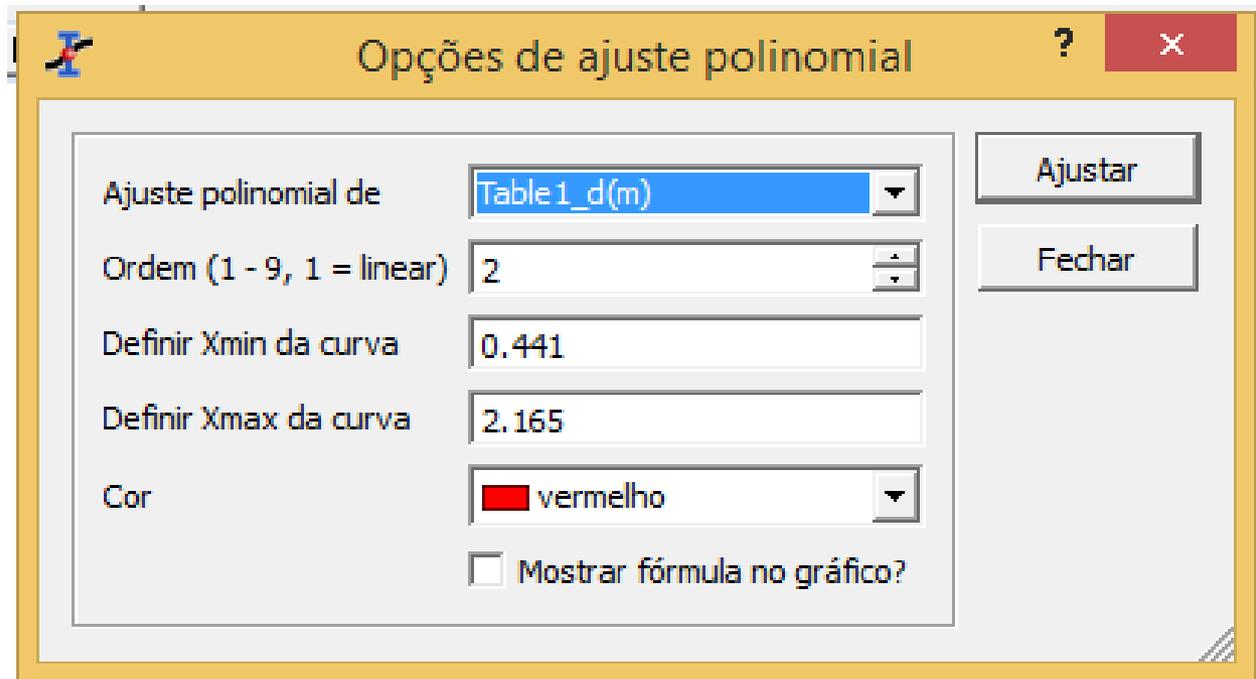
0,003

0,23

0,002

Fit

- Ordem =1 (MRU)



Registro de resultados

[07/11/2014 10:31:28 Gráfico: "Gráfico1"]

Polinomial ajuste do conjunto de dados: Table1_d(m), usando função: $a_0 + a_1 \cdot x$

Erros padrão em Y: Conjunto de dados associado (Table1_errod(m))

De $x = 0,441$ a $x = 2,165$

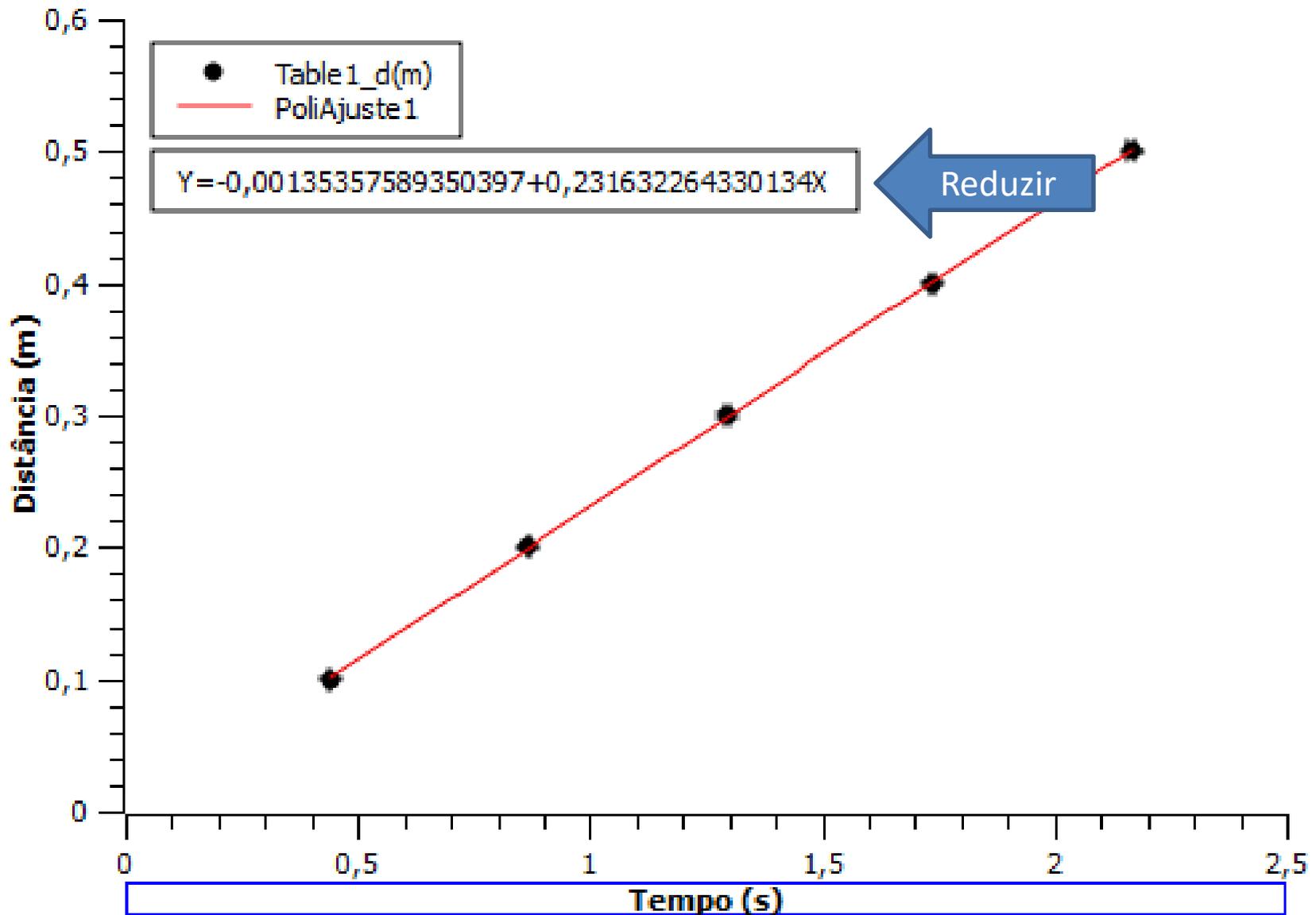
$a_0 = -0,00135357589350397 \pm 0,00105270095295735$

$a_1 = 0,231632264330134 \pm 0,000732501472398111$

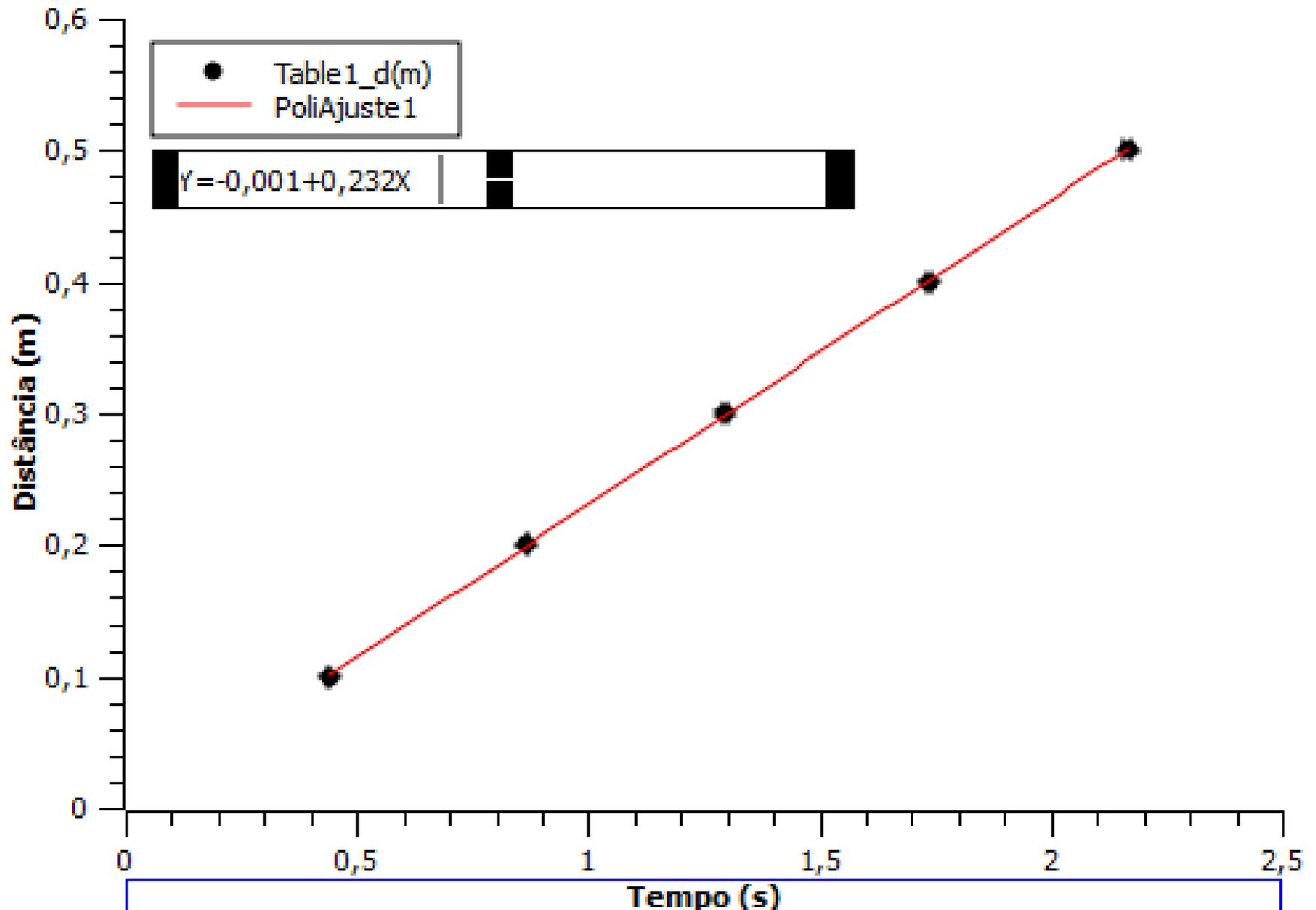
$\text{Chi}^2/\text{doF} = 1,45049622710011$

$R^2 = 0,999956485113187$

MRU



MRU



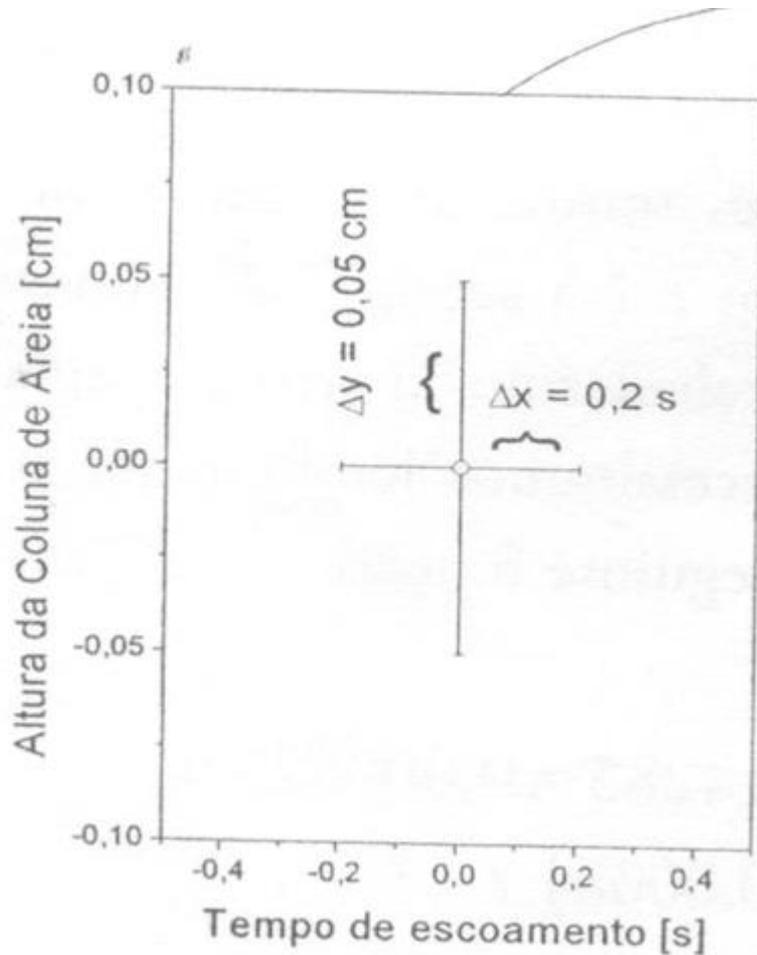
Usando o Assistente de ajuste

Transferência da incerteza de x para y

- A grandeza y é medida em função de uma variável x ($y=f(x)$)
- Ambas as grandezas têm erros experimentais

$$x \rightarrow \sigma_x \text{ e } y \rightarrow \sigma_y$$

Transferência da incerteza de x para y



$$h = (-0,09 \pm 0,04) + (0,1429 \pm 0,0008)t$$

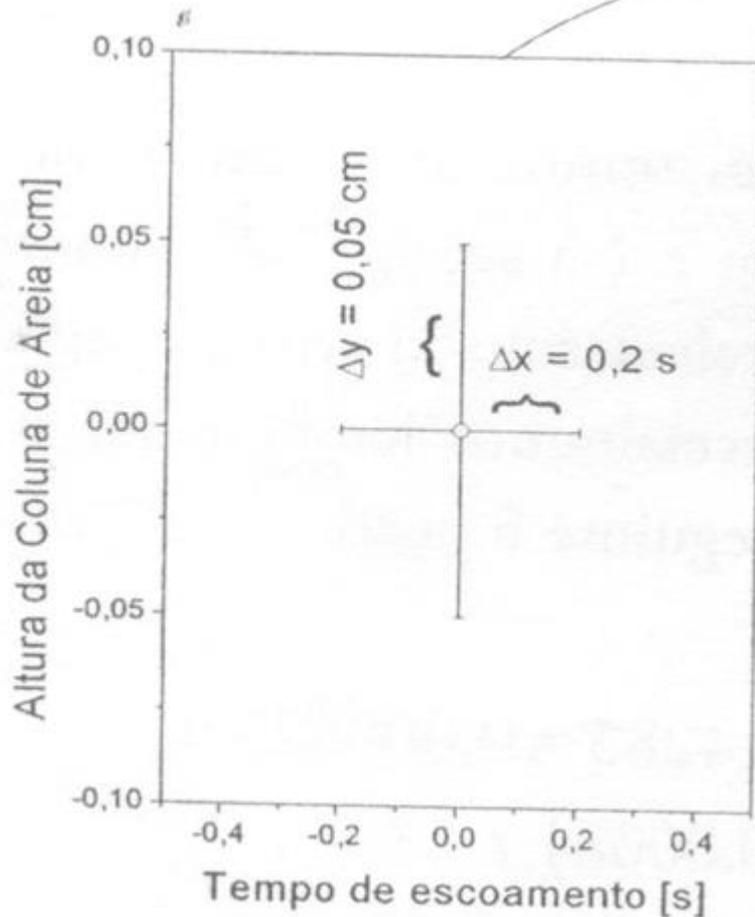
Transferência da incerteza de x para y

$$\sigma_{propagado} = \sqrt{\left(\frac{\delta y}{\delta x}\right)^2 (\sigma_x)^2}$$

$$\sigma_{y,total}^2 = \sigma_y^2 + \sigma_{propagado}^2$$

Transferência da incerteza de x para y

$$h = (-0,09 \pm 0,04) + (0,1429 \pm 0,0008)t$$



$$\sigma_{prop} = \sqrt{\left(\frac{\delta y}{\delta x}\right)^2 (\sigma_x)^2}$$

$$\sigma_{prop} = \sqrt{(0,1429)^2 (0,2)^2}$$

$$\sigma_{prop} = 0,02859 \text{ cm} = 0,03 \text{ cm}$$

$$\sigma_{y,total} = \sqrt{\sigma_y^2 + \sigma_{prop}^2} =$$

$$\sqrt{0,05^2 + 0,03^2} = 0,06 \text{ cm}$$

Transferência de Incerteza

