
Subject: GAUSS2DFIT - TILT ?

Posted by [Zeschke](#) on Mon, 11 Dec 2000 13:45:55 GMT

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Why does the following example not work correctly ?

This program use the "GAUSS2DFIT.PRO" - Routine. The "Tilt"-Parameter-Fit does not work.

What can I do ?

Thanks for any help

Thomas

```
.*****
,
loadct,39

; Define array dimensions.
nx = 128 & ny = 128
; Define input function parameters.
A = [ 5., 100., nx/8., ny/20., nx/2., .6*ny]

; Create X and Y arrays.
X = FINDGEN(nx) # REPLICATE(1.0, ny)
Y = REPLICATE(1.0, nx) # FINDGEN(ny)

;Tilt
T=1.

h=A[4]
k=A[5]
x1 = (x - h) * cos(T) - (y - k) * sin(T)
y1 = (x - h) * sin(T) + (y - k) * cos(T)
U = (X1/A[2])^2 + (Y1/A[3])^2; Create an ellipse.
xvec=x[*],0]
yvec=y[0,*]
yvec=transpose(yvec)

Z = A[0] + A[1] * EXP(-U/2) ; Create gaussian Z.
Z = Z + RANDOMN(seed, nx, ny) ; Add random noise, SD = 1.
yfit = GAUSS2DFIT(Z,B,xvec,yvec, /tilt) ; Fit the function with rotation.

PRINT, '      constant scale width_x width_y center_x center_y tilt'
PRINT, 'Should:', STRING(A,T, FORMAT='(6f8.3)')
PRINT, 'Is:   ', STRING(B(0:6), FORMAT='(6f8.3)')
contour,z,x,y,/fill,nlevels=30
```

contour,yfit,x,y,/noerase

.*****
,

Subject: Re: GAUSS2DFIT - TILT ?

Posted by [Craig Markwardt](#) on Mon, 11 Dec 2000 18:42:54 GMT

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Hi Thomas--

I get problems with your program as well, as shown here.

```
constant scale width_x width_y center_x center_y tilt
Should:  5.000 100.000 16.000  6.400 64.000 76.800  1.000
Is:      4.841 100.218  7.378 10.076 63.884 76.800  0.000
```

This exact subject came up a few months ago by Ken Bowman. I suggested he try MPFIT2DPEAK, available from my IDL library. So far I have found this routine to be a little more robust in finding peaks and establishing rotations.

In your example I obtained the "right" answer with MPFIT2DPEAK:

```
IDL> yfit = mpfit2dpeak(z, b,xvec,yvec,/tilt)
Should:  5.000 100.000 16.000  6.400 64.000 76.800  1.000
Is:      4.999 100.004  6.386 16.007 63.995 76.814  2.571
```

Note that the fitted X and Y axes are flipped from your initial definition, hence the fitted value of 2.571 = 1.000 + !dpi/2. Of course you can easily put the semi-major axis under the X column with a simple transformation.

<http://cow.physics.wisc.edu/~craigm/idl/idl.html>

Craig

```
IDL> print, !version
{ x86 linux unix 5.2.1 Jun  4 1999}
```

"Zeschke" <zeschke@bessy.de> writes:

- > Why does the following example not work correctly ?
- > This program use the "GAUSS2DFIT.PRO" - Routine. The "Tilt"-Parameter-Fit
- > does not work.
- > What can I do ?
- >

>
> Thanks for any help
> Thomas

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
