Subject: Gauss2DFit question
Posted by K. Bowman on Tue, 09 May 2000 07:00:00 GMT
View Forum Message <> Reply to Message

I'm trying to use the library routine GAUSS2DFIT to fit some smooth, blobby functions. My experience so far has been ... ah ... suboptimal. It does not converge quickly or well.

Example (modified from the example in the manual):

```
PRO TEST_GAUSS2D

nx = 128                    ;x-dimension of array
ny = 100                    ;y-dimension of array
x  = FINDGEN(nx)                ;Create x-coordinates
y  = FINDGEN(ny)                ;Create y-coordinates
xx = x # REPLICATE(1.0, ny)     ;Create 2-D x-coordinates
yy = REPLICATE(1.0, nx) # y     ;Create 2-D y-coordinates

;    Offs Scale X width  Y width  X cen   Y cen   Rotation
;    A0   A1    a        b        h       k       tilt
a = [5.0, 10.0, nx/6.0,  ny/10.0, nx/2.0, 0.6*ny, !PI/4.0] ;Parameters

xr   = (xx - a[4])*COS(a[6]) - (yy - a[4])*SIN(a[6]) ;Rotate x
yr   = (xx - a[4])*SIN(a[6]) + (yy - a[4])*COS(a[6]) ;Rotate y
z    = a[0] + a[1]*EXP(-((xr/a[2])^2 + (yr/a[3])^2)/2) ;Compute gaussian
z    = z + RANDOMN(seed, nx, ny)                  ;Add random noise
yfit = GAUSS2DFIT(z, b, /TILT)                    ;Fit the function

PRINT,'Should be:', STRING(a, FORMAT='(6f10.4)')
PRINT,'Is:      :', STRING(b, FORMAT='(6f10.4)')

!P.MULTI = [0, 2, 1, 0, 0]
CONTOUR, z,    x, y
CONTOUR, yfit, x, y

END
```

Including the noise (RANDOMN line) produces unpredictable bad results. Commenting that line out produces reproduceable bad results.

Does anyone have a more robust routine for fitting a 2-D Gaussian (with rotation)?

Thanks, Ken