Subject: Re: surface fit
Posted by thompson on Wed, 09 Nov 1994 13:53:03 GMT
View Forum Message <> Reply to Message

buteau@bali.saclay.cea.fr (A.Buteau 62 17) writes:

> I don't understand what you mean by :

>> One then is not fitting F(X,Y) but F(S). All one needs to do then is to
>> write the definition of the function so that it can then determine X(S) and
>> Y(S). A simple way to do this is through a common block.

O.K., here's a simple example. Suppose that one wanted to fit a
two-dimensional gaussian to a set of X-Y points, i.e.

F(X,Y) = A0 + A1*exp(-r^2/(2*sigma^2))

r^2 = (x-X0)^2 + (y-y0)^2

One would then write the function as follows:

```
FUNCTION GAUSS2, S, A, PDER
COMMON GAUSS2_COM, X_ARRAY, Y_ARRAY
X = X_ARRAY(S)
Y = Y_ARRAY(S)
R2 = (X - A(2))^2 + (Y - A(3))^2
F = A(0) + A1*EXP(-R2/(2.*A(4)^2))
PDER = ...  ;Left as an exercise to the reader :^)
RETURN, F
END
```

Your actual measurement points are a series of X,Y pairs. These are stored as
X_ARRAY, Y_ARRAY in the GAUSS2_COM common block. S is simply an index array
running from 0 to one less than the number of points. If the measured values
at these points are Z, then one can call CURVEFIT as follows

```
Result = CURVEFIT(S, Z, W, A, SIGMAA, FUNCTION='GAUSS2')
```

Bill Thompson