Subject: Bug in CURVEFIT
Posted by Wayne Landsman on Tue, 24 Jun 1997 07:00:00 GMT
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CURVEFIT currently (IDL V5.0 and V4.0.1) contains a line of code which was not in the original BEVINGTON, but which was added as an "improvement"

```
; If a good fit, no need to iterate
 all_done = chisq1 lt total(abs(y))/1e7/NFREE
```

I'm not sure why this code was added (speed?), but it can cause a serious problem when equal weighting is used (W = 1) for data with large negative exponents (e.g. 1e-9). For such data, CURVEFIT will mistakenly think that it does not need to iterate, and will return to the user with what it thinks is a good fit. (There is a secondary problem in that the returned parameters will not be the ones actually used to compute the output YFIT.)

The problem was originally discovered with GAUSSFIT() which calls CURVEFIT() using equal weighting. I have sample data in an IDL XDR save set to illustrate the GAUSSFIT() problem, available at

ftp://idlastro.gsfc.nasa.gov/landsman/curvefit/

I was told that in V5.0, the use of CURVEFIT() was disparaged in favor of LMFIT() which is the "Numerical Recipes" version of the Levenberg-Marquadt algorithm. (I posted a complaint a while back about how LMFIT() requires a user-supplied function in a different and less flexible format than CURVEFIT(). ) But GAUSSFIT() still calls CURVEFIT() and not LMFIT().

--Wayne Landsman landsman@mpb.gsfc.nasa.gov