Subject: Re: SVDFIT Problems
Posted by William Clodius on Fri, 06 Sep 2002 17:08:25 GMT
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Bill wrote:<snip>

>
> This discussion then promted me to look more closely at IDL's code. In that code
> the determination of singularity uses the condition
> small = where(VARIANCE lt max(VARIANCE)*THRESH, count)
> where apparently THRESH is intended to replace Numerical Recipe's TOL. However in
> my old Fortran version of Numerical Recipes, (I don't have a C version readilly
> available), the conddition is acctually equivalent to
> small = where(SINGULAR_VALUE lt max(SINGULAR_VALUE)*TOL, count)
> While the variance is related to the singular value through, the V matrix they are
> not linearly related (the variance is linearly related to the INVERSE SQUARES of
> the singular values) and there is no reason to expect that the two conditions
> would be equivalent. The call to NR__SVDFIT that does the actual fitting in
> SVDFIT does not return the singular value matrix or the V matrix so I cannot
> currently do a detailed analysis, but I suspect the comparison is incorrect.

As I seem to be in a posting mood note that
small = where(VARIANCE lt max(VARIANCE)*THRESH, count)
identifes as small those quantities with the smallest magnitude variances. If relative magnitude (i.e., units) can be ignored, the current code reports as singular precisely those quantities that are best determined given the uncertainties in the input data, while singular is intended to identify those quantities that may be badly determined due to numerical problems.