Subject: Re: Help: Weighted quadratic fitting under IDL?
Posted by Mark Fardal on Wed, 15 Mar 2000 08:00:00 GMT
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bgibson@spitzer.colorado.edu (Brad K. Gibson) writes:

> Anyways ... here it is ... the equation of interest is of the form:
>
> Vmax - 5*log(v) = a[m15-1.1] + b[m15-1.1]^2 + c
>
> I have a data file with Vmax, v, and m15 for a set of objects (about 40 of
> them), with uncertainties on each value.
> Having read those entries in, what I want to do is fit the above
> functional form, deriving a, b, and c, as well as their associated
> uncertainties (i.e. a +/- sig(a), b +/- sig(b), and c+/-sig(c)), and the final
> dispersion (and maybe reduced chi-squared) of the best fit quadratic.
>
> Now .. I can see various routines which get me part-way there, but they either
> only provide a,b, and c without uncertainties, or only provide the
> uncertainties for a linear fit (e.g. fitexy). Basically what I'd like is a
> quadratic version of fitexy (i.e., sigmas on all returned coefficients+
> dispersion of fit+reduced chi-square).

How about POLYFITW, or SVDFIT? They both return errors on the fit coefficients. So you just fit to the dependent variable
y = (Vmax - 5*log(v) ) +- sqrt(sigma^2(Vmax) + 25*sigma^2(v)/v^2)

Hmm...you have errors on m15 too. Is this your question? It's common to ignore those in the fit, if it's not obvious they are the dominant error. Lupton's book section 11.7 discusses the problem for linear fits.

Mark Fardal
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