Subject: Re: regression with error bars
Posted by Craig Markwardt on Wed, 05 May 2010 02:19:26 GMT
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On May 4, 3:57 pm, Meagan Adams <meagan....@gmail.com> wrote:
> Hello
>
> I have two columns of data y (with errors Err+ and Err- for each data
> point) and x (with Err). I would like to find the linear regression
> coefficients A and B (in y=Ax+B) considering the errors in my data
> point. Is their a function in IDL which would do the trick? and the
> regression has to do with the errors in y only but not in x, right?

I don't believe there is a built-in function in IDL which can do this.

You can use MPFIT. The trick is that you will need to be able to form your own scaled residual. Normally you would have a user function something like this,

```
FUNCTION MYFUNCT, P, X=X, Y=Y, ERROR=ERROR
  MODEL = F(X,P)  ;; User model
  RETURN,  (Y - MODEL)/ERROR
END
```

but now you will need to reformulate as,

```
FUNCTION MYFUNCT, P, X=X, Y=Y, ERROR_PLUS=ERROR_PLUS,
ERROR_MINUS=ERROR_MINUS
  MODEL = F(X,P)  ;; User model
  RESID_PLUS  = (Y - MODEL) / ERROR_PLUS   ;; Residual for positive
values
  RESID_MINUS = (Y - MODEL) / ERROR_MINUS  ;; Residual for negative
values
  ;; Combine the two kinds of residuals
  RESID = (RESID_PLUS GT 0)*RESID_PLUS + (RESID_MINUS LT
0)*RESID_MINUS
  RETURN, RESID
END
```

Happy fitting,
Craig