## Subject: A heartfelt thank you for MPFIT
Posted by Gernot Hassenpflug on Fri, 09 May 2008 04:48:58 GMT

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I'd like to extend my sincerest thanks to Craig Markwardt for MPFIT
and its related programs, which allowed me to fit second-order
polynomials to calculated structure function values[1] and also the
formal covariance matrix of the fitted parameters[2].

From these I am able to derive the formal errors in the estimated
horizontal atmospheric wind speed and vertical wind fluctuations
(equated to a simple estimate of assumed isotropic turbulence
intensity)[3].

I spent literally months trying to find out how best to do such
covariance matrix calculations for fitted parameters (also on
calculating the input covariances) with various commercial programs,
since I did not trust myself to use the available open software
without first checking on 'proven' software: Matlab does not have such
a function (I did not trust my coding from scratch based on Numerical
Recipes), nor does Mathematica (unless you buy the extra Statistics
toolbox), and with Maple it is a royal pain to get the parameters out
of the structure they are in---but excellent for cross-checking.

Many thanks once again,

    Gernot Hassenpflug
    NICT, Tokyo

Footnotes:
[1] of atmospheric VHF-band radar signals from spaced receivers in a
    phased array radar in Japan, the MUR.

[2] the theoretical errors in the individual structure function values
    making up the data to which each curve was fitted were derived
    from the statistical errors in the radar signals at each receiver.

[3] using the STARS method by Praskovsky and Praskovskaya.
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BOFH excuse #84:

Someone is standing on the ethernet cable, causing a kink in the cable