
Subject: Re: constrained least-square fit
Posted by [ROsborn](#) on Fri, 08 Mar 1996 08:00:00 GMT
[View Forum Message](#) <> [Reply to Message](#)

In article <4hq1qb\$1f2e@itsrv1.ucsf.edu>, aki@itsa.ucsf.edu wrote:

> I am to do some modeling of data. The modelfunction I am using is nonlinear.
> Therefore I am looking for a Levenberg-Marquard type of optimization routine.
> However I need to apply constraints to the fit (it becomes unstable otherwise).
> so curvefit.pro provided by IDL doesn't do it.
>
> Is anyone aware of a general least-square fit that allows constraints
written in
> IDL?
> Any hints are appreciated,
>
> Andreas

You could always transform the constrained parameters into circular coordinates before calling the procedure. This has the advantage of ensuring that χ^2 varies smoothly at the parameter limits. It doesn't always work but is a better compromise than putting an infinite barrier in the χ^2 v p space.

To transform the parameters, use

$$pt = \arcsin((2*p-pmax-pmin) / (pmax-pmin))$$

Then you can restore them again using

$$p = 0.5*(pmax+pmin) + 0.5*(pmax-pmin) * \sin(pt)$$

Hope this helps.

--
Ray Osborn Tel: +1 (708) 252-9011
Materials Science Division Fax: +1 (708) 252-7777
Argonne National Laboratory E-mail: ROsborn@anl.gov
Argonne, IL 60439-4845
