
Subject: Re: mpfit and linear equality constraints

Posted by [Craig Markwardt](#) on Tue, 31 Jan 2012 16:33:09 GMT

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On Jan 31, 5:03 am, Mats Löfdahl <mats.lofd...@gmail.com> wrote:

> Den måndagen den 30:e januari 2012 kl. 22:56:44 UTC+1 skrev Craig Markwardt:

> Thanks! I read your slides and I think I get some of it. That is, it seems to me that I would be able to do it with a reasonable effort.

>

> But does it really do what I'm trying to accomplish? I want those constraints to be fulfilled exactly. If I were to add my constraints equations naively, for sure they would only be solved in the same approximate sense as the rest of the equations. If there is something in the method you describe that forces them to be solved exactly, I don't quite see it.

No computer can solve an equation exactly, it's a matter of tolerances.

> I guess one could force the approximation of the constraints to be arbitrarily good by setting the tolerances for those equations as very small. But above you say that I should rescale the constraints equations so their residuals are comparable to the data constraints, so this does not seem to be what you mean.

I would say that you should proceed iteratively. First put a looser tolerance on your constraint equations. Then when the equation is close to solved, tighten the tolerances. The solution should converge very quickly.

The reason to not set very tight tolerances at the beginning is that a few very large residuals will confuse any solver. If some of the residuals are ~ 1 and others are $\sim 1e7$, then most any matrix solver will become unreliable.

Craig
