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Subject: Re: solution of linear equations

Posted by [Craig Markwardt](#) on Mon, 18 Feb 2002 16:23:00 GMT

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dinhnq@yahoo.com (Dinh Huong) writes:

> Dear All,

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> I am trying to find the solution for a series linear equations:  $Ax =$

> 0, where A is a n by m matrix, x is a n dimensions vector. In my

> particular example, n=12, m=70, an overdetermined systems, can anyone

> kindly tell the method in IDL? I used SVDC and followed the way

> indicated in 'Using IDL' (page 348) but only obtained 0 for x,

> obviously this method can only return zero whenever  $B = 0$ . Any other

> suggestions? Thank in advance.

Hi Dinh--

If you thinking of a linear least-squares solution, this can be commonly done with a QR decomposition of your matrix A. I'll leave you to look up QR in something like Numerical Recipes (which doesn't have much).

The heart of MPFIT, a \*non\*linear fitter, is a procedure which linearizes the function, and then does exactly a QR factorization. I have ripped out those routines into QRFAC and QRSOLV, and put them on my web page. Perhaps these will help. See the EXAMPLE documentation for QRSOLV to see how you would solve an equation.

Basically, you want to do,

QRFAC, A, R

X = QRSOLV(A, R, B)

where B is a zero-vector. Note that A is destroyed in the factorization.

Good luck,  
Craig

<http://cow.physics.wisc.edu/~craigm/idl/idl.html> (under Math)

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Craig B. Markwardt, Ph.D.      EMAIL: [craigmnet@cow.physics.wisc.edu](mailto:craigmnet@cow.physics.wisc.edu)  
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