
Subject: Eigenvalues

Posted by [Javier Sanchez Gonzal](#) on Wed, 10 Nov 1999 08:00:00 GMT

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Hi all,

I would like to know if there are some procedure to extract complex matrix eigenvalues when this matrix is complex.

Subject: Re: Eigenvalues

Posted by [address](#) on Fri, 12 Nov 1999 08:00:00 GMT

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In article <38299C7E.B9CAE41B@gbt.tfo.upm.es>, Javier Sanchez Gonzalez <jsanchez@gbt.tfo.upm.es> wrote:

> Hi all,

> I would like to know if there are some procedure to extract complex

I guess you will have to use a trick to do an SVD on a complex matrix.
The trick I used is from Numerical Recipes:

$[A + iC]$

is your complex matrix, A real part and C the imaginary. Do the SVD on the real matrix:

$$\begin{bmatrix} A & -C \\ C & A \end{bmatrix}$$

To solve a system of linear equations for example:

$$[A + iC] [x + iy] = [b + id]$$
$$\begin{bmatrix} A & -C \\ C & A \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} b \\ d \end{bmatrix}$$

You lose a factor of two in efficiency solving the big real matrix instead of the smaller complex one, the alternative is however interfacing a complex SVD routine to IDL. Also a lot of work.

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\\|/ ASCII Ribbon campaign against HTML mail /"

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