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Subject: Re: Is there a good procedure for Minimum Variance Analysis?

Posted by [Wox](#) on Tue, 29 Jan 2008 13:56:22 GMT

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On Mon, 28 Jan 2008 17:54:58 -0800 (PST), "duxiyu@gmail.com"

<duxiyu@gmail.com> wrote:

> I want to perform the Minimum Variance Analysis on a set of magnetic  
> field data.

> Is there a good procedure in IDL for this analysis?

>

> Best regards,

> Du

Don't know what it is, but in chapter 8 in this document

[http://www.issibern.ch/PDF-Files/analysis\\_methods\\_1\\_1a.pdf](http://www.issibern.ch/PDF-Files/analysis_methods_1_1a.pdf)

it looks like you have to make a (co)variance matrix from the X,Y and Z components of the field data

$$M = \begin{pmatrix} \text{cov}(X,X) & \text{cov}(X,Y) & \text{cov}(X,Z) \\ \text{cov}(Y,X) & \text{cov}(Y,Y) & \text{cov}(Y,Z) \\ \text{cov}(Z,X) & \text{cov}(Z,Y) & \text{cov}(Z,Z) \end{pmatrix}$$

Then get the eigenvectors with `tried/triql` (because M is symmetric).

The eigenvector with the smallest eigenvalue is the boundary normal.

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Subject: Re: Is there a good procedure for Minimum Variance Analysis?

Posted by [duxiyu@gmail.com](mailto:duxiyu@gmail.com) on Fri, 01 Feb 2008 03:03:30 GMT

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Thanks very much.

It is very helpful.

Du

On Jan 29, 9:56 pm, Wox <nom...@hotmail.com> wrote:

> On Mon, 28 Jan 2008 17:54:58 -0800 (PST), "dux...@gmail.com"

>

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> Z components of the field data

>

>       cov(X,X) cov(X,Y) cov(X,Z)

> M=   cov(Y,X) cov(Y,Y) cov(Y,Z)

>       cov(Z,X) cov(Z,Y) cov(Z,Z)

>

> Then get the eigenvectors with trired/triql (because M is symmetric).

> The eigenvector with the smallest eigenvalue is the boundary normal.

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