Subject: Re: Degree of Polarization
Posted by russell.grew on Fri, 03 Oct 2008 00:37:13 GMT
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Hi Nicola,

Firstly, John Samson's polarization papers generally scare me.
However, in this instance the DOP doesn't look too hard to code.
Assuming you are talking about eqn (17) you just make the spectral
matrix S from your signals and find the trace of it etc.

Which aspect of it is giving you grief?

Assuming you have a 3 component signal with components, x, y and z,
take FFT of each component then calculate spectral matrix terms, eg:
Sxy = X(w) * conjugate(Y(w)). Obviously there is a bit more to it in
terms of windowing (& window compensation) and time averaging of data
and/or smoothing.

There are other less mathematical approaches to polarization (eg:
equation 5 in Fowler et al., JGR 1967) that might be useful. Also
Section 10.8 in Born & Wolf, Principles of Optics gives good
background on the spectral matrix and details on using the Stokes
parameters for the polarization analysis (as opposed to the Spectral
matrix).

Good luck!

Russell.

Subject: Re: Degree of Polarization
Posted by Nicola on Fri, 03 Oct 2008 07:45:48 GMT
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On Oct 3, 2:37 am, RussellGrew <russell.g...@gmail.com> wrote:
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>
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> background on the spectral matrix and details on using the Stokes
> parameters for the polarization analysis (as opposed to the Spectral
> matrix).
>
> Good luck!
>
> Russell.

Thank you very much for the further bibliographic references. Actually
my question arises much more because laziness than difficulties. In
any case I found another good paper (according to my opinion) from
Zanandrea (Computer & Geoscience 2004) based on SVD and multitaper.
But here I found another lack of IDL, i.e. there is any built in
routine for multitaper spectral analysis. I made a search on the
usenet group but didn't find anything and so I'm trying to translate
from Matlab code where this analysis exists on the signal processing
toolbox.
I will give a look to you suggestion
thank you very much
n