
Subject: Re: Help with WV_CWT

Posted by [Balthasar Indermuehle](#) on Mon, 08 Oct 2012 22:38:08 GMT

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Further examination of this seems to suggest that the Y scale is in fact contained in the returned variable "scales", however, this is an assumption as the frequency components it finds in the test signal are now closer to where they should be but still not at the exact spot. I find no documentation that would evidence that this is what it is... wavelets with IDL, the great unknown...?

Subject: Re: Help with WV_CWT

Posted by [Michael Galloy](#) on Mon, 08 Oct 2012 22:53:41 GMT

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On 10/8/12 4:38 PM, Balthasar Indermuehle wrote:

> Further examination of this seems to suggest that the Y scale is in
> fact contained in the returned variable "scales", however, this is an
> assumption as the frequency components it finds in the test signal
> are now closer to where they should be but still not at the exact
> spot. I find no documentation that would evidence that this is what
> it is... wavelets with IDL, the great unknown...?

Maybe you could use the "iTools help system":

```
$IDL_ROOT/lib/wavelet/source/wv_cwt.pro
```

Mike

--

Michael Galloy

www.michaelgalloy.com

Modern IDL: A Guide to IDL Programming (<http://modernidl.idldev.com>)

Research Mathematician

Tech-X Corporation

Subject: Re: Help with WV_CWT

Posted by [Phillip M. Bitzer](#) on Tue, 09 Oct 2012 01:25:50 GMT

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Balt-

AFAIK, there is no "simple" connection between frequency and scale. It's not quite as simple as an FFT (although you might argue to ordering of frequencies returned by IDL isn't exactly simple :-))

There are a couple things to help you along. First, the IDL Wavelet

toolkit helped me a lot when learning about wavelets:

vis.lbl.gov/NERSC/Software/idl/help/docs6.0/wavelet.pdf

I also suggest you take a peek at the site:

<http://paos.colorado.edu/research/wavelets/>

Chis Torrence wrote most (all?) of the wavelet routines for IDL. The article "A Practical Guide to Wavelet Analysis" he is lead author on is quite useful.

For the immediate problem of how scale relates to frequency, check out this from the aforementioned web site:

The period (or inverse frequency) is the approximate Fourier period that corresponds to the oscillations within the wavelet. For all wavelets, there is a one-to-one relationship between the scale and period. The relationship can be derived by finding the wavelet transform of a pure cosine wave with a known Fourier period, and then computing the scale at which the wavelet power spectrum reaches its maximum.

<http://paos.colorado.edu/research/wavelets/faq.html#scale>

I recall that I mucked around a lot "under the hood" with the wavelet routines to really understand them. I also use `wv_applet` quite a bit to check my own code.

Hope this helps!

Subject: Re: Help with WV_CWT
Posted by [Balthasar Indermuehle](#) on Fri, 12 Oct 2012 02:38:33 GMT
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On Monday, October 8, 2012 10:25:52 PM UTC-3, Phillip Bitzer wrote:

Awesome hints Phillip, many thanks!

Cheers

- Balt