Subject: Re: Discrete sine transform
Posted by mvukovic on Thu, 02 May 2002 15:36:44 GMT
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"Dominik Paul" <dpaul@ukl.uni-freiburg.de> wrote in message
news:<aar135hqq1@n.ruf.uni-freiburg.de>...
> I am not 100% sure about it, but I think the sin transform is just the
> imaginary part of the Fourie Transformation.
>
> Dom
>
> "Matthew Angling" <mjangling@QinetiQ.com> schrieb im Newsbeitrag
> news:aaqvkg$85k$1@hamble.qinetiq.com...
>> Hello all,
>>
>> I'm another lurker drawn out to ask for help. I think this is more of
>> a maths question rather than IDL, but as I'm working with IDL and this
>> seems to be the most friendly newsgroup I know of, I thought I'd try
>> here!
>>
>> Does anybody have the algorithm for the discrete sine tranform coded
>> in IDL. If I understand correctly it can be done (with some
>> redundency) by using the FFT - but I'm not sure how!
>>
>> Thanks in advance for your help,
>>
>> Matt
>>
>> --
>> Dr. M. J. Angling
>> Centre for RF Propagation and Atmospheric Research
>> QinetiQ Malvern
>> mjangling@QinetiQ.com
>>
>>
>>

nope! Funny, I was just leafing Numerical Recipes on that topic yesterday. By way of explanation (and probably quoting the Book and other authorities), the sine transform is a ``complete'' transform of the data, i.e., you can get the data back by doing an inverse transform. If you were just to take the imaginary part of your FFT, you would loose half the information, and could not recover it when doing the inverse.

The Book does provide an algorithm to do it using the FFT. You have to make an anti-symmetric series out of your data by extending the data series. The first N samples stay the same. The other N samples

are anti-symmetric about N+1 where the N+1 sample must be zero. I've never done it, and advise going to the Book itself to make sure you got everything right. The topic is covered in Ch. 12 of the second edition.

Mirko