Subject: Re: How to rebin complex array?
Posted by R.G. Stockwell on Wed, 14 Apr 2004 16:31:28 GMT
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"James Kuyper" <kuyper@saicmodis.com> wrote in message
news:407D40F3.F045EC70@saicmodis.com...
> Timm Weitkamp wrote:
> ...
...
>> By the way, there is a good reason for REBIN not to work on complex
>> arrays, and that is the fact that there is not really any proper way of
>> interpolating between two complex values.
>
> Why in the world not?

In the 2D complex space, it is ambiguous as how to interpolate.

Breifly, one could interpolate real and imaginary seperately, as
suggested in this thread. Or one could average the lengths of
the vector, and the angle of the vector.

For any rotating vector time series, component-wise interpolation
will almost always underestimate the amplitude of the interpolated value.

Consider two subsequent values, [1,0] and [0,1].
If this is a unit vector rotating, then the "correct" interpolated
value would be [1/root 2,1/root 2] = [.707,.707]. The componently
interpolated value is [.5,.5].

So it really depends on what the type of time series one has.
It may be that a "norm preserving interpolation" may be required.
(average the lengths of the vector rather than just average components).

Cheers,
bob