Subject: Re: Complex rebin
Posted by MKatz843 on Thu, 27 Mar 2003 02:35:05 GMT

> Any reason why REBIN doesn't take complex args?

I can't say why REBIN doesn't take complex args, but I can say that
you have to be very careful when you interpolate complex values if you
want to have meaningful results.

Consider these two numbers
$z1 = complex(1,0) = 1.$
$z2 = complex(-1,0) = -1.$

Suppose you were using rebin to redice the size of a linear array by
2.
Which of the following behaviors would you want?

You could separately average x and y like this, and get zero:
$z\_avg = (complex(1,0) + complex(-1,0))/2. = complex(0,0) = 0$

Or, you could respect the fact that the phase changes by 180 degrees
but the amplitude doesn't change at all. So,

$z\_avg = complex(0,1) = i$

This second value would come from
$z1 = r1*exp(i*theta1)$
$z2 = r2*exp(i*theta2)$;--- note i = complex(0,1)

$z\_avg = ((r1+r2)/2.) * exp(i * (theta1+theta2)/2.)$

To accomplish the first mode, you could break up and separately REBIN
real(a) and imaginary(a).

To accomplish the second mode, you could break up ans separately REBIN
abs(a) and atan(a, /phase)

M. Katz

Subject: Re: Complex rebin
Posted by the_cacc on Thu, 27 Mar 2003 14:24:55 GMT

Ahh, of course. I knew it would be something like that - I had a
similar problem with MEDIAN a few months ago. I'm only using REBIN to
expand a 2D array to 3D (containing the same values) so I just

separated Re and Im and REBINned them separately, easy.

Thanks.

Subject: Re: Complex rebin
Posted by Craig Markwardt on Fri, 28 Mar 2003 09:12:26 GMT
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MKatz843@onebox.com (M. Katz) writes:

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This one. It's what all the other flavors of REBIN do.

It's the "compress" form of REBIN that I would be really interested
in, i.e. the ability to sum up loads of complex values.

Craig

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