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